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AMERICAN JOURNAL OF PHOTOGRAPHY,
FEBRUARY, 1895.



AMERICAN STUDIO PORTRAITURE.

NEGATIVE BY FREDK. GUTEKUNT, PHILADELPHIA.

AMERICAN JOURNAL OF PHOTOGRAPHY

THOS. H. McCOLLIN, Managing Editor.

JULIUS F. SACHSE, Editor.

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No. 182.

THE COMBINATION OF NATURAL AND ARTIFICIAL LIGHT.

THE question of supplementing daylight with a suitable artificial medium of requisite actinic power, has been agitated by various writers and professional portraitists upon both continents for the past year or two. Special reference being made to studio work; as the method certainly shows advantage in many cases over the use of either daylight or magnesium alone as an illuminant.

Dr. Liesegang, in a late number of the *Archiv*, in enumerating some of the advantages, states that it is much easier to obtain a sharp and clear focus when the blitz-pulver is used in connection with daylight, all the difficulties experienced at night are removed.

Then in daylight the action of the sudden, sharp, bright flash of the blitz-pulver does not act near so harshly upon the sensitive optic nerves of the sitter, and results in a much more pleasing expression.

As the chief advantage, the learned photo-scientist states that the combined process offers a much better opportunity for obtaining a soft and harmonious lighting and negative. Much more so than an exposure made with a flash of blitz-pulver in the dark. As all of the usual annoying hard high lights are entirely overcome, which usually result when a single source of extremely brilliant light is resorted to.

By the combined method we have a medium entirely within our control to bring about any effect desired by the simplest means, we can as we desire create at will more or less soft or contrasting negatives. All that is necessary being to move the sitter closer or farther from the window, as the case may be, or by the use of reflecting screens, or lengthening the daylight exposure a trifle.

In ordinary practice, however, it has been found desirable to regulate the light sources, so as to be of an equal duration, as otherwise we are apt to disturb an even lighting.

In the combined process, daylight is here virtually used as a supplementary medium, and need not be bright or strong, frequently the best results are obtained upon a cloudy day, or such as we have during the winter. It is in the latter season when this combined process becomes of interest and value to the professional portraitist.

M. Bovier, who conducts a well-known studio in Brussels, if we mistake not, has long practiced this method at times when the daylight was insufficient for his purposes. In describing his method of procedure, he states that after he has obtained the proper focus, and all is ready for the exposure, he uncaps the lens with one hand, and at the same moment or a second or two later with his other hand, he squeezes the bulb which ignites the blitz-pulver.

The flash apparatus should be placed at the distance of about a yard from the camera, well to the front, either to the right or left of the camera, according to the judgment of the operator. It should always be elevated so as to throw the light upon the sitter at an angle of 45° to 50° . As soon as the blitz-pulver has been set off, the lens is to be re-capped and the operation is over.

The time of such exposures is calculated to be about one-fiftieth of a second.

It is a curious fact that in the resultant negative the side of the sitter turned towards the window or daylight will be the shadow side, while the exposure toward the blitz-pulver will be the light side.

To develop such exposures, Bovier uses the following formulæ :

- | | | |
|----|-------------------------------|----------|
| A. | Distilled water | 750 ccm. |
| | Sulphite of soda | 50 g. |
| | Pyrogalllic acid | 15 g. |
| B. | Distilled water | 75 ccm. |
| | Carbonate of potash | 10 g. |

For use, to develop a plate say 5x7, place the exposed plate in a tray, pour over it 60 ccm. of solution A, after one or two minutes add fifteen drops of B. If the image does not appear in about thirty seconds, add fifteen more drops of B, repeat this as often as necessary up to the moment when the high lights appear, then let the process of development proceed without any further addition of alkali.

When greater contrasts are wanted, a few drops of a 10° solution of bromide of potassium should be added.

In connection with this interesting subject it is well to call the attention of the photographer who wishes to avail himself of this method of supplementing the natural source of light with an artificial medium to the fact that much depends upon the actinic power and rapidity of the latter. The magnesium preparation, known in both Europe and America as blitz-pulver, seems to have proven its adaptability for this and similar purposes, while the attempts to substitute aluminum and other metals with the view of cheapening the powder have failed in every case to produce a satisfactory illuminant, on account of the lack of actinic power of the substitutes employed.

In conclusion the writer will add a word of caution,—too great care cannot be exercised in the use of quick-burning mixtures for photographic purposes.

Powders put up by unknown or unreliable parties, and whose only claim is their cheapness in price, should especially be avoided, no matter how attractive the label and name under which they are sold. Magnesium has a set price on the market, and the only way to reduce this is by either substituting a cheaper and less actinic metal, adulteration or reducing the quantity of the metal magnesium.

Avoid all cheap flash mixtures, as they offer a source of danger without giving corresponding results, but confine yourselves to such as have been tried and found reliable.

J. F. SACHSE.

THE KALITYPE PROCESS.

PROF. W. K. BURTON, IMPERIAL UNIVERSITY, TOKIO, JAPAN.

AT an ordinary meeting of the Photographic Society of Japan, held at the rooms of the Geographical Society, Tokyo, on Friday, December 13th, 1894.

The Chairman called on Messrs. W. K. Burton and T. Kondo to demonstrate the Kalitype process.

The demonstrators stated that they considered this process to have certain advantages over any other. They would not compare its general merits with those of the Platinotype process, but it—the Kalitype process—had certain advantages of its own. It was cheap, was very easily worked, and was the only process they knew, giving a visible image, that would give a true black print from a thin negative and that seemed suitable to almost any kind of paper. The process depends on the fact that ferric oxalate is sensitive to light, being changed thereby into ferrous oxalate, which latter salt has the power of reducing various metallic salts, nitrate of silver amongst the number.

The process is a very old one, but that worked by the demonstrators was a modification of a recent form thereof, introduced by Mr. O. P. Bennett. The following is a description of the process :

Ferric Oxalate	75 grains.
Silver Nitrate	30 grains.
Water	1 ounce.

This solution is swabbed over the paper with a wad of cotton wool. The coating is, of course, made as even as possible, but streakiness that cannot be avoided does not, as a rule, show in the finished print. The paper is dried in front of a clear fire before the solution has time to sink into it.

Paper so prepared will keep for several days in any ordinary wrapping, for months in a calcium tube.

The quantity mentioned is enough to coat about 10 square feet of smooth paper, 5 feet of extra rough drawing paper.

Printing is done in the ordinary printing frames, the time taken being about one-third that needed for albumenized paper. The image is visible, and has the exact appearance of the image in the platinotype process—in fact it is of exactly the same nature—and any one accustomed to platinotype printing can readily judge when the paper should be taken from the frame.

DEVELOPER.

Rochelle Salt.	1 ounce.
Saturated solution of Borax.	10 ounces.

Restrainer.—A one per cent. solution of bi-chromate of potassium.

The effect of the restrainer is very marked. Without any of it in the prints are liable to be "muddy" and to have impure whites. The least that is needed is seven or eight minims to each ounce of solution, and no more than this should be used for negatives such as are suitable for printing with albumenized paper, or such as are at all hard. In printing from thin negatives, restrainer up to the extent of 30 minims per ounce may be used, the exposure being correspondingly increased. In this way it is possible to get brilliant prints from negatives too thin to give such by any other process.

The image develops from a pale yellow color to a full, deep black in a very few seconds, but if the print be at once removed from the solution it will be found that the high lights are yellow. It must remain in the solution for at least quarter of an hour. It is to be observed that no further actual developing action takes place during this time. Though the developer can be altered to suit different negatives, or even to a certain extent to compensate for error in exposure, the result cannot be modified in any way when once the print is in the developer.

In using smooth paper, a number of prints may be developed in the same solution, pouring the developer into a measuring-glass as soon as one print is developed, placing an undeveloped print on the top of this latter, and returning the developing solution, the prints being afterwards kept moving just as in the ordinary toning process. In using very rough paper, however, this

procedure is not permissible, as the image gets rubbed from the tops of the rugosities of the paper, with the result of a mottled effect.

After development the prints are washed in three or four changes of water, and are then placed in the fixing-bath, consisting of a one-per-cent mixture of strongest ammonia and water, where they remain for about a quarter of an hour. Washing for half an hour completes the process.

A large number of samples of work on different kinds of paper were shown, some being on common cartridge paper.

The proceedings ended with a vote of thanks to the chairman.

PHOTOGRAPHIC PERIODICALS.

WHAT are they good for, anyway? is a question occasionally asked in reference to the various photographic publications, the questioner in every case being one of two distinct classes, either the slipshod professional, or the know-it-all amateur. The former, whose business is always poor, and who, to keep afloat, drops his prices lower and lower, uses correspondingly cheap stock and chemicals, and turns work out "good enough" for the price, while his neighbor or competitor across the street is over-run with orders at paying prices, and, notwithstanding his rush, still finds time to intelligently peruse both matter and advertisements in one or more of the journals that are published in the interests of the craft, and to profit thereby.

The incentive for above remarks are based upon several practical illustrations that have lately come to the notice of the writer, and from the oft-repeated assertion in these pages that it is the busiest and most prosperous professional who always has time enough to read his particular journal.

It is this class of photographic bread-winners who will read, heed and profit by what is presented to them, in the way of hints, formulæ and suggestions. You will never find a man of this

class, when speaking about photographic literature, ask the question, "What are they good for, anyway?" He knows the value, uses the medium, and profits by it.

The first practical illustration: In the *JOURNAL* for June, 1894, p. 141, we published a paper upon "Mannerism in Posing," in which we illustrated to what an extent a set mannerism of pose was carried in some of the leading galleries in the country, and the awkward conditions resulting therefrom. A simple experiment was also suggested as a means for overcoming the difficulty.

A few days ago business took the writer into one of the largest and most renowned galleries in the country. The proprietor greeted his visitor with the somewhat startling words, "Well, Brother S., that was a hard hit you gave me in your *JOURNAL* last summer." We immediately disclaimed any such intention, and asked for an explanation, as well as the occasion. "Well," said our genial friend, "See here," and called our attention to the paper on "Mannerism in Posing," in the *AMERICAN JOURNAL OF PHOTOGRAPHY* for June last, viz.:

"In this lot, twenty-four cabinet portraits were the work of one firm of deserved reputation. In technique, style and artistic effect they were above criticism, when taken singly, but when the attempt was made to make up the desired groups it was another thing, as twenty-one out of the twenty-four were all posed, lit and photographed in almost the same position. To make a group with every head the same pose and looking in the same direction was out of the question."

After he was through he was told that this was not the particular establishment alluded to. This seemed to surprise him, and he continued; "Well, when I read this paper, and I always take the *JOURNAL* home so as to look over it carefully, I said, Why, this is certainly intended for me. See here," pointing to a large frame of exquisite cabinet specimens upon the walls of his operating room, "these are my best efforts, that I used to exhibit in the reception room; they are set in what was my pet pose." Sure enough, every head was pointed in the same pose, looking towards the left.

"Do you know," continued the artist, "I considered that the

ideal pose and lighting. But after reading your paper I at once removed the frame from the reception room to the operating room, as I certainly don't want my patrons to think that I can only make a good picture in a single pose.

"Now, I consider that you have done me the greatest favor ever done in business. I have been in portraiture almost all my life, and do you know, this subject never struck me until I read your paper on 'Mannerism in Posing' in the *JOURNAL*. Look at my choice specimens made before last fall, they are all just as you say,—all in a similar pose.

"Now since that time, after trying the simple experiment you proposed with a plaster cast, I have not taken two subjects consecutively in the same position or light, and some of my sitters I have taken in three or more positions, to get at the same time an artistic portrait and get away from anything approximating what may be called a set mannerism.

"I consider," continued the artist, "that that paper alone has benefited me more than what my subscription has amounted to for the last ten years."

Another illustration: A large manufacturer of photographic specialties writes: "Please send me another copy of your November *JOURNAL*, as I want to cut out the page with the "Simple Tests for Water," and paste it up in my laboratory. I consider this single page of greater value to me than anything that has come to my notice for a long time. Enclosed find check for subscriptions for 1895."

This firm, whose name is known all over the country in connection with photographic specialties, does not ask, "What are they good for, anyway." They read, heed and profit, and encourage the publishers by renewing their subscriptions promptly.

We now come to the other class,—the know-it-all amateur, who belongs to the local tripod club, and, thanks to the perfect dry plates now on the market, with ready-mixed solutions from developer to combined toning and fixing baths, now and then succeeds in getting a fair negative, which, after having been printed by an expert professional, is at once hung on the walls of the Society, and the inevitable medal awarded, and suspended

around his neck by a baby-blue ribbon. About the many failures and plates spoiled before the accidental success, nothing is said.

It is this kind of an amateur who usually airs himself with the opinion, "What do writers and editors know about photography?—nothing."

Fortunately there is another kind of genus *amateur photographica*. He is often a busy man, either professional or mercantile, and in most cases is neither a member nor censor of a photographic club, but he is a conscientious worker, and in a quiet way often produces not only excellent artistic work, but results of scientific and historic value.

Amateurs of this class always find time to read current literature, and keep posted, not only as to the technical part, but also in the latest improvements in chemicals and apparatus. When speaking of photographic periodicals, they never ask, "What are they good for, anyway?" but they read, heed and profit, improving their results, and in many cases, by their experience, adding contributions of value to our stock of knowledge. J. F. S.

Polarized Light.—An interesting demonstration of the phenomena was shown at the rooms of the Photographic Society of Philadelphia, when the members and their friends were given a gorgeous display of the "Colors of Polarised Light." The specimens were shown by Mr. Oscar Knipe, who employed a projecting polariscope, the illuminant of which was the electric arc, and the display comprised a large number of mica and selenite preparation—of Mr. Knipe's own make—which illustrated finely the principles of interference. The collection included simple quarter-wave micas, and sectors, selenites of various forms and thicknesses, mica wedges, 24-sector plate to show optical torque, concentric circles (the axes at varying angles), and an exquisite double quartz. Professor Arthur W. Goodspeed, of the University of Pennsylvania, introduced the subject with a remarkably clear exposition of the principles of polarization, exhibiting a number of simple models, which made plain the somewhat complicated details of the subject. A cordial vote of thanks was extended to Mr. Knipe and Professor Goodspeed at the close of the evening.

SUNSET AND DAWN.

MR. ROBERT BLIGHT lately published a paper in the *Sunday Press* upon the causes for the beautiful coloration so often seen upon the horizon in this latitude. In the course of the paper he described "nature's magic wand," and the simple laws by which it creates such gorgeous results as to defy the painter's brush.

We reprint such parts of the paper as relate to the "Law of Refraction," "Chromatic Influences," and the "Formation of Color," as a subject of primary interest to every intelligent photographer, professional or amateur.

It is a well-known fact that a ray of light has its direction changed in passing from a lighter to a denser medium. This is called "refraction." It is just as true if the ray passes from a denser to a lighter medium, and you may try a simple experiment in connection with this. Place a half-dollar or other coin in a basin and then draw back until you barely lose sight of the coin. The straight line, or ray, between your eye and the coin is intercepted by the edge of the basin. If you could only bend it so that it could get over the edge you could see the coin. Get a friend to pour water, which is a denser medium than air, into the basin and the coin leaps at once into sight. The ray of light has been bent in passing from the denser to the lighter medium.

We may express the law of refraction thus: A ray of light entering a denser medium, the surface of which is horizontal, is bent nearer to a perpendicular to that surface. You will readily see that if we suppose the atmosphere to be composed of concentric layers the path of a ray from the sun, the moon or the stars would follow the sides of the polygon. Shorten these sides indefinitely by diminishing the supposed number of concentric layers, and the path becomes a curve. As we see in the direction of a tangent to that curve, the object we look at appears higher than the point from which the ray started.

We must also realize that when a ray of common light is refracted it not only has its direction changed but it is decom-

posed into longer and shorter waves. Perhaps it would be better to say "dispersed," rather than "decomposed." We know that when such a ray is refracted through a prism and is received on a screen, we do not get a spot of white light, but a Band in which are arranged "the colors of the rainbow." This is called the spectrum, and the order is always the same, no matter what medium is used in the prism. The colors in the spectrum of sun-light range from red through yellow, green, blue, violet and indigo to lavender. Outside the red and outside the lavender there are other rays, invisible to our powers of vision—the heating rays and the chemical rays, respectively—but they do not concern us now.

We must also distinguish between two kinds of light, sky-light and sun-light. Sky-light is a portion of the light of the sun scattered (dispersed) by small particles floating in the atmosphere. Sun-light is the light of the sun itself borne on waves from the body of the sun to our eyes. If we turn our eyes on a clear day in any direction but that in which the sun is we see the deep blue of the sky-light. It is visible also at night, for the earth is but a minute ball in the vast light of the sun, and even the shadows are partially illuminated. Even on the darkest night there cannot be that absolute darkness which implies the absence of all light.

This sky-blue is due to the presence of particles infinitesimally small, which scatter the blue rays chiefly, and so give us the sensation of blue. The greater the number of the fine particles that are encountered by the sun-light, the greater will be the scattering and the bluer the sky. As you ascend the highest mountains the air becomes rarer, the particles become fewer and fewer, the sunlight passes on more and more undispersed, until at the summit of the mountain the dome of the sky is black with the blackness of space. I have said thus much to emphasize the necessity of recognizing the existence of these particles.

We will now approach the study of what we may call the chromatic aspect of the sunset and the dawn. We must here remember that refraction does more than bend the rays of light. It disperses them according to the refrangibility of the colors, that refrangibility being least at the red end and greatest at the opposite end of the spectrum. In fact, the atmosphere performs

the functions of a prism under certain conditions. It is to this scattering of the rays of light that we owe the peculiar softness of light which accompanies sunset and sunrise. This softness you can test yourself by viewing a sun-bathed landscape through glasses variously tinted.

Let us now refer to the diagram I suggested, of a circle to represent the earth and shaded color or concentric layers of different shades to represent the atmosphere. Take a point to represent our position on the circumference of the earth, and another point on the diameter produced passing through us to represent the sun's position at noon. You see that its rays, in order to reach us, pass through our atmosphere. A tangent to the circle through our point will represent our horizon. Take different points from the vertical line to the horizontal line to represent the sun at various times after noon. Notice how the path of a ray increasingly lies through dense portions of the atmosphere. Now accurate calculations have been made with this result, that at ninety degrees above the horizon the light of the sun passes through one atmosphere; at seven and one-half degrees through density equivalent to eight atmospheres; when nearly setting to thirty-two atmospheres, and on the horizon to thirty-five and one-half atmospheres. On a clear day in summer you cannot bear to look at the sun at noon without protection of some sort for your eyes, for this light passes through one atmosphere only; when he is setting, however, you can look straight at his eye. In fact, when setting the sun is 420 times less luminous than at noon on a summer's day. But even at that season when water-vapor is present in abundance we can bear to look upon his disk; and in winter time, because his path is lower in the heavens, we may observe him unprotected at almost any hour of the day.

When the atmosphere is heavily charged with moisture, as in the case of fog or mist, let us look down a gaslighted street. The lamps farthest away are red and dim, half-way down they are orange and brighter, close by they are of the normal yellow color. When there is no fog the lights are pretty much of the

same tint, from the nearest to the farthest, and the light differs in intensity only owing to distance.

Let us now make a simple experiment which you can readily understand even in imagination. I place a condensing lens in front of an electric light. Before this lens I put a screen with a circular opening, and before that again a lens which throws a circular disk on a sheet or screen. We have a clear, white disk of light which we will call our sun. Now we will introduce an imitation atmosphere, in the shape of a glass trough containing a solution of hyposulphite of soda. The disk remains white and clear. A few drops of hydrochloric acid are placed in the solution, and soon they begin to re-act, and minute particles of sulphur begin to be held in suspension in the path of the beam. Note what follows: A pale yellow color appears on our sun, then an orange tint succeeds, as the turbidity increases; next, with a still greater number of particles suspended, red sets in; and then the red gives way to darkness, for the increased turbidity prevents any light from passing. If, however, you look at the trough, you will see that, while no blue rays tinted the image on the screen, a halo of blue light which may be compared to the sky is scattered from the trough.

We should be able now to understand not only the color of the sun when setting, but the gorgeous coloring of the sky and clouds which accompanies it. The color of the sun may sometimes be different from the coloring of the sky. But the difference is entirely dependent on the scattering of light by the particles suspended in the air. Let us take a common instance which shall illustrate all instances: We see a ruddy sun low down toward the horizon, and stretching far away, even to the zenith, are crimson clouds lying against a pea-green sky, which becomes orange as it falls into the west. The ruddy sun is easily explained by the experiment, for it shines through a density corresponding to many atmospheres. If we were a few thousand feet up we should see the sun almost as bright as at midday, because there would not be so dense a path for its rays.

The crimson clouds are generally about 1000 feet above us, and will be illuminated by an orange tint. The rays, however,

in order to reach us have to pass through 1000 feet of dense atmosphere. This cuts off the orange light and leaves only the red to reach us. But in addition to being lighted up by the sunlight, the clouds are also illuminated by the blue light of the sky, and the feebler the intensity of the red is the bluer will be the light reflected to us, and, therefore, we may get any shade from crimson to purple.

The pea-green appearance is due to contrast, for green is complementary to red, and the blue sky seen through the complementary color takes on that peculiar bloom. The orange sky in the west is readily understood. When the sun approaches to within seven and one-half degrees of the horizon it shines through a density equivalent to eight atmospheres. At this point the violet, the blue and most of the green rays are cut off, leaving the yellow rays, which cause a yellow sky; as the sun sinks lower and the equivalent number of atmospheres becomes greater, the yellow rays begin to pass through orange into simple red.

It is not infrequent to see the summit of high mountains tipped with crimson soon after sunset. This is due to the fact that the sun has sunk so low that its rays traverse a density of atmosphere sufficient to cut off all rays but the red, and the red rays mingling with the blue light of the sky give us crimson effects.

The general absence of red effects at dawn is due to the lack of moisture in the atmosphere, for during the night there has not been so much evaporation as there is during the day. Should water-vapor particles be so abundant as to cause a red dawn, the atmosphere must be in a state approaching saturation, and soon there will be complete saturation. Hence we take a red dawn to be a prognostication of a downpour.

It will be seen that the mysterious glories of the sunset and the dawn are easily solved by the laws of refraction, coupled with the knowledge that the air holds in suspension myriads of particles. What magnificent effects result from little things!

A newly-married runaway sometimes walks off and forgets to pay the preacher, but he never forgets to kiss the bride.

THE TRIALS OF A PHOTOGRAPHER.—II

IN my last letter I gave some of the every-day trials of an artist, Mr. Napoleon Bonaparte Smith, of Biddleville. Many are the trials and tribulations of the photographer who is located in a small or suburban town, especially if on a railroad, and near a large city, as is my friend Smith.

The Christmas season, with its worriments was over, and, between tin-types and bromides had panned out fairly well. It must be remembered that the professional of a small town or county seat, within say fifty miles of the metropolis, has not only to contend with the better-equipped galleries of the city, and the cross-roads perambulating photographer, whose studio and residence all center within the confines of his wagon that he has hauled from village to village, but also with a kind of opposition unknown to his professional brethren in larger towns.

Frequently the striving professional has competitors who combine the photographic profession with their regular business; for instance, there is a town on the Pennsylvania railroad where the "artist" divides his time and talents between his tonsorial atelier in the front room, and his photographic "studio" in the rear. There is but a thin partition between the two rooms, and the span a short one between the sublime and ridiculous. In another case the operator is either a dentist or photographer, as the occasion requires; it makes little difference to him, so long as the customer, be it client or patient, selects the particular species of torture to which he wishes to submit himself. The price is the same,—it costs 50 cents to have either a tooth pulled or a negative made.

As to the competition of the amateur in a suburban town, and the injury he inflicts upon the regular professional, we will say nothing in this letter.

Now even if the regular resident professional artist overcomes all such opposition, local and sporadic, and builds up a paying business, by turning out good work, and being patient, courteous and obliging, as is our friend Smith of Biddleville, he has still many annoyances to overcome in the general course of his business.

It was formerly said that one of the greatest trials of a country artist was the visits of the stock-house drummer, who always had the knack of bothering the operator when he was busy. Now, as if dull trade and cut prices were not bad enough, a new factor has appeared in the field, one who far surpasses his former rival; and since his advent the average professional on more than one occasion has felt that his cup of misery now indeed was full.

He is a modern creation, a child of circumstances, and of but a few years' growth. He comes into your gallery or studio and introduces himself as "The Demonstrator."

While passing a few hours with my friend Smith of Biddleville, I was surprised how much more plentiful solicitors were, than clients for sittings. It was a few days after New Year's; the first train from the city had not been up ten minutes, when in walked a slick individual. "Good morning, Smith; came up to see if you didn't want a case or two of plates. No? What's up, didn't you have a good season?" "Yes, don't want the Foggemup plate any more." "How's that,—won't buy plates from us again because we are in the combine. Well, sorry for that, let me take your order for a thousand or two of cards or mounts,—don't want either?—well, so long, let's hear from you when you run short. Heard the latest joke?—no, well, it's a good one, will tell you all about it when I come again. So long."

Hardly had the drummer gotten down stairs, when the door again opened, and in walked an individual who certainly looked sporty. Smith, scenting a possible sitter, wheeled out his centennial stand, and glanced towards the curtains of his skylight. In the meantime the visitor looked around the studio, and without noticing Smith turned to the reception girl back of the counter, and asked if Mr. Smith was in. Being referred to the genial artist of Biddleville, he turned, held out his hand, and said: "Mr. Napoleon Smith?" "Yes sir, what can I do for you?" "Well, Bony, how are ye, I'm glad to make yur acquaintance. See, I'm deemonstrater for Blister & Fade's new high-class paper see? I've cum all de way down here to give ye a demonstrate, see? what, don't know our paper,—that's funny,—see, we don't sell through them stockhouses, so as to give ye all the profit, see? Now, ye see

AMERICAN JOURNAL OF PHOTOGRAPHY,
FEBRUARY, 1895.



PROFESSIONAL FLASH-LIGHT PORTRAITURE.

MADE WITH THE McCOLLIN PROFESSIONAL FLASH-LAMP.

NEGATIVE BY J. R. CUMMINGS,

WILMINGTON, DEL.

Bony, our paper all ye want to do, is to work it on ice, see, no hot water about ours, youse just turn on the cold water spigget in winter, an youse all right, see? Got any negatives here, and I'll print ye up a dozen or two right away, see? All I ask you to do is to buy a gross of paper, see? I carry it right here in my overcoat pocket, see?

"What, don't want any, don't want to see any demenstrate? Why I give two demenstrates in this town already, and sold 'em both. Bony, ye will be behind the time; there's the fellow that keeps the barber-shop, bought a gross smack down. What, got an engagement,—well, you'll be sorry. Good-bye."

Hardly had this fellow been gotten rid of, and a sitter who had dropped in posed, when the door again opened. This time it was a swell-looking dude, high hat, tan kid gloves and bunch of violets on the lapel of his overcoat, with college colors neatly displayed. The reception-girl spruced herself up, put on her sweetest smile and leaned forward, and with a slight blush, said, "What do you wish sir?" In the meantime the door again opened and a colored boy entered carrying a gripsack. Upon motion of the young man he set it down, and with hat in hand stood at a respectful distance. The former, slowly removing one of his gloves, took from a scented card-case a dainty pasteboard and handed it to the girl. The legend on it read, Mr. C. Augustus Hayflower, representing the Fixantonem Company. He asked to have his card presented to Mr. Smith as soon as disengaged, no hurry. Sitting himself down, the young man chatted pleasantly with the young girl. After Smith's sitting was over, the young man politely approached Biddleville's chief artist, and introduced himself, stating that he had run down to see him, and at the same time introduce the new paper his house was now making; that he was by no means what was known as a demonstrator but the scientific expert sent out by his firm, and by a practical manipulation make it evident to the professional photographic artist that for ease of handling and simplicity of process, with the attendant artistically-beautiful results, he would find it to be to his interest to use in his gallery exclu-

sively Fixantonem's new triple-coated flat-surface heliotype paper, the only actual rival of albumen.

"Then," he continued, "our paper is triple-coated by three different layers being superimposed one upon the other, precisely in the same manner that lantern slides are produced in the colors of nature, with the exception that ours are on monochrome in place of three colors. This you will observe gives us an absolutely permanent picture, which can never fade nor the whites yellow. You will observe, that first our paper is coated with a gelatine substratum, then with an emulsion which contains the molecules of argentic bromide held in suspension by a medium known only to our firm; this is covered with a film consisting of a combination of collodion and albumen.

"Now when you print your paper under a negative the image forms in the middle layer of the coating, the lower one preventing it from sinking into the paper, and by placing the prints in a water bath brought up to the temperature of ebullition, the albumen in the film combining with the collodion will immediately coagulate and form an impervious coating for the image beneath. The print is then placed in a toning and fixing bath of our own composition, and the molecules unacted upon are dissolved and drawn out through the substratum into the paper, and afterwards washed out with boiling water. You will observe, Mr. Smith, how correct we are in both theory and practice. I will be pleased to show you some of my samples, and if you wish it, my attendant will give you a practical demonstration of our process."

When the dude demonstrator got through we were both still alive, but weary. Smith showed it. Taking the initiative, he said, "My friend, it is pretty hard for an everyday photographer to know what to do or what to use, when, within two hours, one practical demonstrator comes along and advises the exclusive use of cold water and ice, and is hardly gone when in comes another who talks water heated to the boiling point. I guess I better stick to my solaristotypes, that I make on good old albumen paper. I can wash them under the tap no matter how the temperature is."

J. FOCUS SNAPPSCHOTTE.

THE PHOTOGRAPHIC VALUE OF COLORS.

ALTHOUGH most, if not all, photographers are well aware that the colors of objects that they wish to photograph often present special difficulties, and although it is generally known that reds, oranges, yellows, and greens photograph badly, or, in other words, are made to seem much blacker in the print than they appear to the eye, whilst with blues and violets it is the reverse, there is reason to believe, from recent communications, that a few words on the subject in its general aspects may be helpful.

The subject is a very complicated and difficult one, for many reasons, some of which will be evident as we proceed. In considering it, the first question naturally asked is, what light do observations with the spectrum throw upon the problem? As a matter of fact, a considerable number of very careful observations have been made by various experimenters, some with a view to determine the relative brightness of different parts of the spectrum to the eye, others with a view to ascertain the relative effects exerted by different regions of the spectrum on photographic plates of various kinds.

Professor Rood, by combining his own determinations of the various colors in the spectrum with Vierordt's measurements of the brightness of different parts of the spectrum to the eye, arrives at the following table as expressing numerically the relative luminosities of the different spectrum colors, i.e., their relative brightness to the human eye:

Dark red	.	.	.	.	.	.	80
Pure red	.	.	.	.	.	.	493
Red	.	.	.	.	.	.	1100
Orange red	.	.	.	.	.	.	2773
Orange and orange yellow	.	.	.	.	.	.	6985
Orange yellow	.	.	.	.	.	.	7891
Greenish yellow, yellow-green, and green	.	.	.	.	.	.	3033
Blue gree and cyan blue	.	.	.	.	.	.	1100
Blue	.	.	.	.	.	.	493
Ultramarine	.	.	.	.	.	.	90.6
Blue violet	.	.	.	.	.	.	35.9
Violet	.	.	.	.	.	.	13.1

Even at the very outset we are met by a fact which shows how very difficult such measurements are, and which seems to indicate that we can only arrive at relative measurements capable of being expressed numerically under certain arbitrary and conventional conditions, but not capable of being expressed absolutely, nor in general terms suitable to all cases. The particular fact is that the colors of different parts of a spectrum change when the brightness of the spectrum as a whole changes; the brighter the spectrum, or, in other words, the greater the intensity of the original light, the more nearly do the different colors tend to become white. We thus have it impressed upon us that in dealing with color as color we are dealing with a subjective and not an objective phenomenon. Our results, therefore, are not of the same constant character that they might be if we were dealing only with energy and dead matter, but are liable to vary with each individual observer and with each living being experimented on.

Turning now to the question of the action of the spectrum on a photographic plate, and how far the action of different regions on the plate corresponds with their effect on the eye, we find that very numerous experiments and observations have been made. The general result is well known. The maximum action on the gelatino-bromide plate is exerted by the blue region and somewhat less by the blue violet, whilst in one direction the action gradually falls off as we pass the violet and the ultra-violet rays, and in the other direction it falls off rapidly, becoming very small in the green, and almost imperceptible in the yellow, unless the plate is exposed for a long time.

Very little consideration of these results shows that the photographic action of the different spectrum colors differs enormously from their relative luminosities. The luminosities of blue and orange-yellow are represented by the figures 493 : 6985, and yet the blue exerts the greatest action on the gelatino-bromide plate, whilst orange-yellow exerts practically no action at all. In the case of yellow-green and green, the difference, though not quite so great, is still very striking. Lastly, red and blue are practically equal in luminosity; the latter exerts the maximum action on a photographic plate, the former practically no action at all.

With orthochromatic or isochromatic plates the results are different, and by means of ammoniacal erythrosin solution the photographic action of the yellow-green can be made greater than that of the blue, but as yet the relative photographic actions, even under the most favorable conditions, are far from corresponding with the relative effects on the eye.

If we try to express these results in numbers we are again face to face with difficulties. The relative photographic actions of different parts of a given spectrum depend on the nature of the plate and on the duration of the exposure; with short exposures the differences are exaggerated, with long exposures the effect of the different rays tends to become more nearly equal.

It is clear, therefore (and we consider it very important that this should be constantly borne in mind when the problem is being considered), that even when we are dealing with the spectrum, we cannot obtain any absolute measurements; we can only arrive at results that must be expressed in general terms, or, if expressed in figures, must be accompanied by a precise statement of the conditions, such as the brightness of the spectrum as a whole, the time of the exposure of the photographic plate, the nature of the plate and the like. At the same time, it must not be supposed that the results are not sufficiently definite to be of very great practical importance. Much of the knowledge that plays an essential part in many great industrial occupations is of a similar approximate character.

In practice, the conditions are much more complicated than when we are simply working with a spectrum. We have to deal with colors that are very often not pure spectrum colors, and, moreover, are mixed with more or less reflected white light, which affects both the effect on the eye and the effect on the photographic plate. In the daytime, at any rate, the colors of the various objects are the result of the action on daylight or sunlight of the particular fragments that those substances contain, and it is quite clear that if the character of the sunlight varies, it is probable that the colors of the various objects may change, and it is obvious that the quantity of light reflected from any object in a given direction will vary with the position of the sun.

The following table may help to make further aspects of the subject more intelligible. It was calculated by Professor Rood, from his own measurements of the quantity of the various colors in the spectrum, and Vierordt's measurements of the brightness of the various colors. It gives the quantities of light of various colors in 1,000 parts of white sunlight.

Red	54
Orange-red	140
Orange	80
Orange-yellow	114
Yellow	54
Greenish-yellow	206
Yellowish-green	121
Green and blue-green	134
Cyan-blue	32
Blue	40
Ultramarine and blue-violet	20
Violet	5

1,000

As the sun approaches the horizon, the proportion of violet and blue rays continually decreases.

C. H. B. in *Photography*.

Facts for the Dark-room Man to bear in mind.—Temperature of development and developer has a great effect upon the resulting negative. It should not vary in range more than ten degrees. Between 60° F. and 70° F. is a good temperature for uniform results.

Heat accelerates and cold restrains development.

White light entering camera or dark room, too much light during development, decomposed Pyro., introduction of Hypo. or Nitrate of Silver into the developing solution, from the fingers or other sources, too warm developer, or developer containing too much *alkaline* solution, cause *Weak and Fogged Negatives*.

Under development causes *Weak Negatives with Clear Shadows*.

Under exposure causes *Too Strong Negatives with Clear Shadows*.

Using too stiff a brush in dusting off plates causes *Fine Transparent Lines*.

A SIMPLIFIED PHOTO-CHROMOSCOPE.

CARL ZINK, of Gotha, Germany, a well-known German photographer, who is at the same time an ingenious mechanic, some time ago patented a coating apparatus, remarkable for its simplicity and practicability, and which proved a great boon to dry-plate makers.

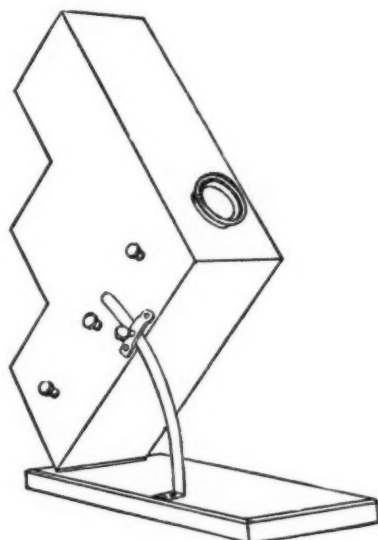


FIG. 1.

At the late meeting of the German Photographic Association at Frankfurt a.-M., Herr Zink was again an exhibitor. Upon this occasion it was a simplified Photo-chromoscope, by which, with aid of three positives, resulting from negatives made through the requisite color-filterers, were reflected upon three surfaces, so as to appear, when viewed through a graphoscope or other suitable lens system, as one picture greatly magnified in the natural colors.

The extreme simplicity and cheapness of this instrument, combined with its practicability and superiority, at once brought it into notice.

By reference to the two accompanying cuts it will be seen that all delicate adjustment and consequent danger of derangement are overcome. Further, that by the use of a large magnifying lens combination similar to the graphiscope, the image is viewed greatly enlarged, which is a great improvement over the microscopic eye-piece thus far used.

Figure 1 represents the apparatus ready for use, the only object for the adjustment being the better to turn the images towards the source of light. No extra powerful illumination is necessary with this simple apparatus, as has been the case with similar apparatus thus far. It is stated that a clear diffused light is all that is requisite.

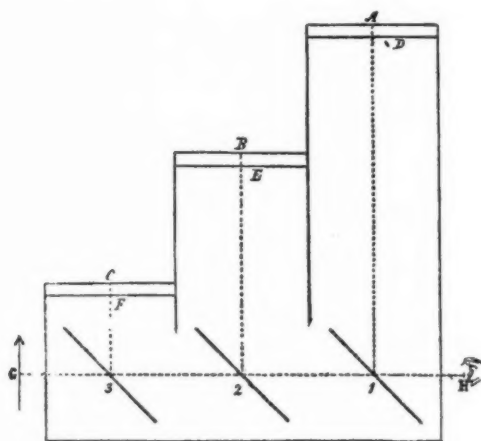


FIG. 2.

Figure 2 explains the simple mechanism of the new apparatus. A B C marks the position of the diapositive. F the red, E green, D cyanine blue glass respectively. 3 is a polished silver or platinum mirror, 2 and 1 ordinary sheets of polished glass that reflect the images from F D E towards H where the colored rays are united.

How the negatives are made in the first instance will be treated upon in full in a future paper.

PHOTO-MECHANICAL PRINTING PROCESESS.

(Continued from page 28.)

CHROMO-COLLOTYPES are produced with a number of collotype plates, using different colored inks as in chromolithography. The negative having been made, it is blocked with opaque varnish in all parts, except those required to be reproduced in a certain color. From this a collotype plate is produced to be used with that colored ink. The varnish is then removed, and the negative blocked for another color, and so on. In printing, the paper is passed through with the different plates until all the colors have been printed on it, forming a complete colored image.

Instead of blocking out the negative there are at present many processes of photographing the object, with specially prepared plates, through color-screens which have the effect of shutting off or absorbing some colors while allowing others to pass through to the sensitive photographic film. This is more clearly explained in the three-color processes described later on.

Hydrotpe is a kind of reversed collotype invented by M. Cros. A plate coated with dichromated gelatine is exposed under a positive transparency; the plate is washed and immersed in an aqueous dye. This is absorbed by the parts unaffected by light, and will yield a contact print by transference of the dye to a sheet of dampened paper.

Leimtype. A process devised by Husnik, of Prague, in which gelatine images in high relief are used for direct printing in the ordinary printing-press.

A thick plate of chromatized gelatine is exposed under a negative. This is then attached by means of guttapercha to zinc or wood. The surface is next developed by means of a solvent, usually an alkaline dichromate, which not only dissolves the parts unacted upon by light, but serves to strengthen the relief. This is not carried too far at first; the lights are then covered with an opaque ink, and the plate exposed a second time to harden and strengthen.

Photo-Lithography. The term includes a variety of processes in which the artist's drawing on the stone is replaced by a photographic image. In direct photo-lithography the polished stone is spread over with a solution of gum arabic and potassium dichromate. It is then dried and exposed under a negative. After this the stone is well washed and rolled in with ink.

The process which is almost universally employed is known as the "transfer method." In this a sheet of paper* is coated with albumen or gelatine containing dichromate, which when dry is exposed under a negative, and afterwards coated over with a greasy lithographic transfer ink. The inked paper is floated face upwards on boiling water, which coagulates the albumen. It is then washed with warm water, which removes the ink from the parts not acted upon by light. Where the light has rendered the colloid substance insoluble it retains its hold of the ink. The image in printer's ink is now termed a photo-lithographic transfer, which is laid on the stone, and, when the two are passed through a press, the fatty ink image is transferred from the paper to the stone.

Photo-Caustics. This term is applied to certain photo-lithographic processes where the half-tones are obtained by photographing the object or picture to be reproduced, through a ruled screen, as in the half-tone process.

Chromo-Photo-Lithography. Processes in which pictures are printed in two or more colors from different stones, the negatives being prepared as described in notes on chromo-collotypes and three-color printing.

Photo-Electrotypes. A very large number of processes come under this heading. They all consist, practically, in first exposing a sheet of chromatised gelatine under a negative. If half-tone effects are to be produced, grained or lined negatives must be employed. The effect of the light shining through the negative is to render certain parts of the gelatine film insoluble and incapable of absorbing water. After exposure, the gelatine is either soaked in water to swell the remaining soluble parts, or it

* In order to avoid distortion by expansion or contraction of the paper supporting the transfer, tinfoil is now used by many workers.

is treated with a warm-water bath, or acetic acid to wash them right away, leaving the insoluble parts to form an image or relief.

From these, moulds in wax or plaster are made, from which a copper relief block for typographic printing is made by the electrolytic process. To obtain half-tones by grain from the ordinary negative, Waterhouse's method is as follows :

A Woodbury relief is first developed on a silvered copper plate, washed, immersed in a solution of dichromate, drained and dusted over with very fine waxed sand. When dry this is brushed off, and it will be found to have granulated or pitted the gelatine image, the pits being deepest in the thicker parts. From this an electrolytic is made which forms the printing plate.

Photo-Zincography. Processes similar to those described under photo-lithography, but the image, instead of being transferred or printed direct upon the stone, is transferred or printed upon a zinc-plate, which is then treated with an acid to engrave the lights and give a slight relief to the remaining parts.

Photo-Engraving. Although the term practically includes many of the processes already described and many others, yet it is now generally applied to what is also termed the *half-tone* process, by means of which a metal relief block for typographic printing is made from a photograph, drawing, or direct from the object itself.

A collodion negative is first made. In front of the sensitized plate a glass screen is fitted, having on it a number of fine black lines ruled both ways. These lines are made by mechanically ruling the glass with a diamond and filling in the cuts with a black substance. They are ruled from eighty to two hundred lines to the inch, and form a fine network through which the image must pass before it reaches the plate. The result is that half-tones are broken up into a series of dots ranging in size according to the amount of light passing through. A copper or zinc plate is polished and immersed in a weak solution of nitric acid to give a biting surface. It is afterwards coated with albumen containing a dichromate and dried. Exposure under the negative is the next operation, after which the whole surface is inked all

over with an even film of transfer ink. The plate is then immersed in a dish of clear cold water, and gently wiped with a piece of soft substance, which removes the albumen and ink from the unexposed parts. When dry again, the plate is dusted with finely powdered bitumen, and held over a stove until the powder just softens sufficiently to adhere. In this manner we have a bitumen image on the plate capable of resisting the acid, which is next applied to eat the copper from the bare portions. A process that is now being employed very largely by photo-engravers in this country is known as the Enamel Process. In this a mixture of fish glue, albumen, and dichromate is used to coat the plate. After exposure and development it is heated over a stove until the color turns to a deep brown. When cool it is ready for etching.

Typogravure, A process invented by Major de la Noe. A prepared plate is coated with a film of sensitive bitumen, exposed, and developed as usual. The plate is then etched with diluted nitric acid until the depth of about 1-250 of an inch is reached. It is then dried and again coated with bitumen. The ground is next polished off with a stick of charcoal, leaving the bitumen on the lines, after which the plate is gummed and printed from as in photo-zincography.

Photo-Gravure. The idea of producing copper intaglio plates by means of photography was first worked out by Niepce. Many other processes have followed.

About 1870 to 1871 Woodbury suggested to Goupil & Co. a method of photo-gravure, which was taken up by that firm and worked with considerable success. A gelatine relief was made in the same manner as for the Woodburytype process, except that a fine gritty powder was added to the gelatine to give the necessary grain. From this relief a mould and electrotype are made.

The process that is generally employed may be described as follows :

From the negative to be reproduced a positive transparency is produced. From this a carbon print is made, which will of course be a negative one. This is transferred and developed upon a copper plate (to which a fine grain has been given by dusting

over with fine bitumen powder and heating), and forms the resist in the etching bath. After treating with the etching fluid (perchloride of iron) the carbon image is removed and the plate cleaned. It can then be printed from in the same manner as a copper-plate etching or mezzo-tint engraving.

Goupil-gravure is a method of making fac-similes of water-color drawings. The plate is carefully inked in by hand with the different colored printing-inks, and the picture printed by one impression. The method is, of course, very costly, as skilled artists have to be employed for coloring the plates.

Three-Color Printing. This is a process still in its infancy, although very important results have been obtained during the last year or two. The aim of the process is to obtain by three printings a perfect fac-simile of a colored picture or object. Three negatives are made, the plates being color-sensitized by three different dyes, each of which will absorb one-third of the spectrum, and reflect the other two-thirds. The effect is further assisted by the interposition of different color-screens, which absorb certain rays, and allow others to pass through the plate. From these negatives three printing plates are made by the collotype or half-tone engraving process. One is printed from with a yellow ink, the other with a red, and the third with a blue. The super-imposition of these colors and their combinations should give in the final result a fac-simile of the original colored object. That is, theoretically they should do so, but the theory breaks down in practice, principally owing to the want of printing-inks answering the necessary requirements of color and transparency. The subject has, however, already become a most fascinating study, and results have been obtained which are equal to pictures printed in a much larger number of colors.

The above sketch of photo-mechanical printing methods, written at a few hours' notice, is necessarily very incomplete. To include the whole number would have required a book of several hundred pages; but if it enables the reader to better understand the various specimens exhibited upon the walls of this exhibition, its purpose is served. There are already a number of well written works upon the subject to which the student seeking further information is referred.

LA FARGE ON ART.

THE course of lectures on art which John La Farge is delivering at the Academy of the Fine Arts, beginning Tuesday January 15th, promises to be one of the most valuable and interesting that has ever been given here; and it has even been said that they will be the most important discourses on the painter's art since Ruskin's famous Oxford lectures. There are six lectures in the series, and it is said they have been entirely re-written since Mr. La Farge delivered them at the Metropolitan Museum, last winter. To students and artists anything Mr. La Farge may say about painting is valuable, for he holds a high position in the world of art, and to any one with a taste artistic, his lectures cannot fail to be interesting and instructive. The lectures are delivered in the large gallery of the Academy, at 3 o'clock of the afternoons for which they are scheduled as follows; Tuesday, January 15, "Essential Divisions of the Work of Art;" Friday, Jan. 18, "Personality and Choice;" Tuesday, Jan. 22, "Suggestion and Intention;" Friday, Jan. 25, "Misapprehensions of Meaning;" Tuesday, 29, "Mania, or Illusions;" Friday, February 1, "Sincerity."

A synopsis of the lecture follows:

First lecture—Proposed plan of the lectures. Considerations of what museums of art offer for study. Classification of the kinds of lessons to be derived from their contents. Difference between such a course of study and the usual practical studies which must have preceded. Why more specially painting and sculpture are called art. The artist expresses what is in reality himself. Personality impossible to conceal in the work of art. The thought that makes the work of art not reflection or reflective thought. Deficiencies of the thought, with analyses; genius as the power of co-ordinating innumerable memories. The record of memories even in the superficial appearances of the work of art. Many essential characteristics inseparable from the work of art must be lost to us in certain cases. Style is living form. Certain forms consequently impossible to imitate. Ruysdael and

Millet. What happens when methods are separated from sentiment. What happens to imitators. Loss of the meaning and influence of the work of art when it has been made to appeal especially to momentary interests. Rules exist for art, not art for rules. But art is a language and has a grammar, which varies only as language varies. Preparation of the artist for the free world that he creates. We help him to make it; and taste may be a form of genius. Possibility of living in the work of others. In what true originality consists. What we learn to know is men.

Second lecture—Examples of original artistic life having been begun from works of art. The memories and practices of the studio necessarily carried out of door. Danger of confusion of practices with principles. Methods are but tools. There is no absolute way of painting. The artist is judged by an appreciation of the way he looks upon the world. There is no absolute nature; there can be no absolute view of nature. Practically there is no such thing as realism. How differently painters might look at the same subject. For each variation some special translation by the hand; for each variation by the hand some modification in the use of material.

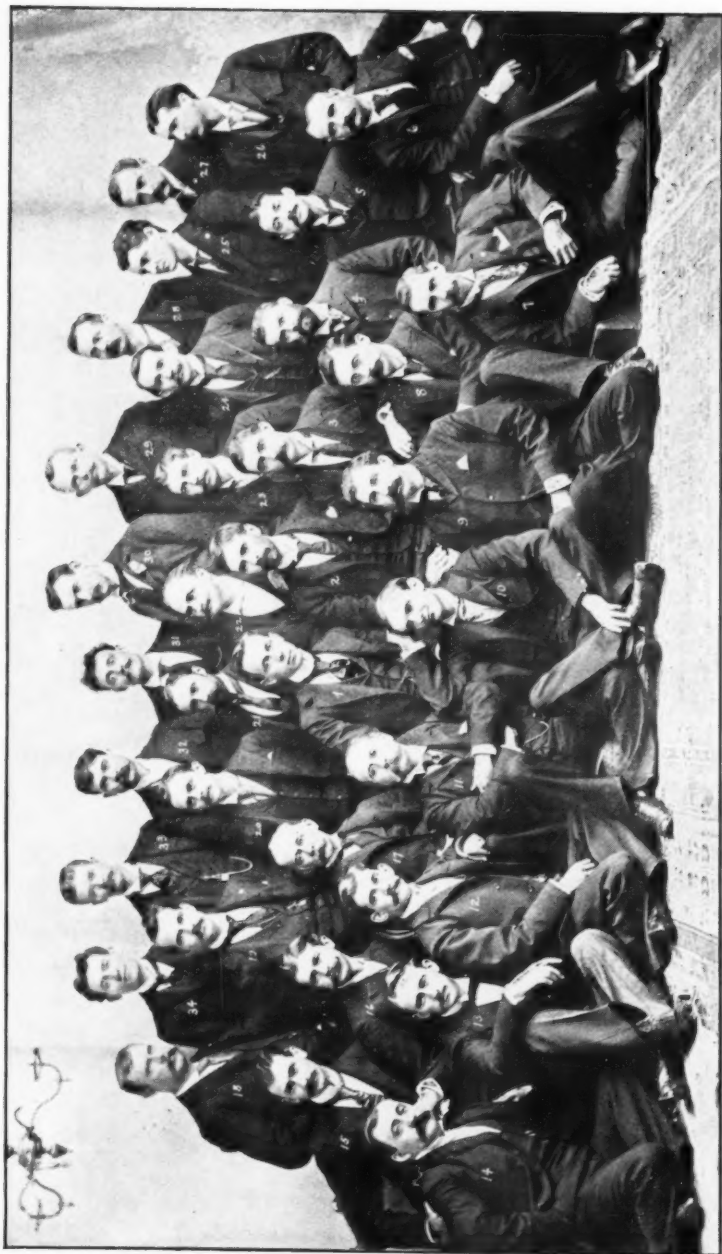
Third lecture—The illusion suggested by the artist's work is directed by him, but mostly made by us. Selection of one factor in the scene to the exclusion of others. Drawing a natural convention, a manner of synthesis and suggestion by lines that imply things. Illusions in black and white. Hieroglyphics of representation by drawing a bridge over which we pass to receive the desired impression. What is there is what we intend to see. The religious painter; Michael Angelo's view.

Fourth lecture—What we see in an artist's representation is our sight of our memories in it. This is not equally possible for all. Ignorance or oppressive knowledge may interfere. Difficulties in the way of the painter's free sight, owing to training. The artist's frequent narrowness not unnatural. Often it is the proof of a final closing of his susceptibility. Reasons for not enjoying certain works of art. The student may add to his powers from what is furthest away from him in art. Of necessity the artist's own record of memory may come to be understood only as other

people's memories accumulate, if he goes beyond what all expect, hence time must be a factor in the growth of appreciation.

Fifth lecture—The museum a modern makeshift. Older methods of teaching art. The museum and the academy. The lesser arts. The work of art that we call decoration. Its insufficiency to-day. Its fulness formerly. Color and composition. Consideration of how we are through the impression of color. What we see is translated to us by some effect of colored light, and that effect is placed within laws of arrangement which sometimes we call perspective, and sometimes composition. Painting and the painter of to-day. References of the difficulties through which we see. The illusions and inaccuracies of our senses. Partial review of technique of artistic vision. The sight of the moment a theme upon which we embroider former memories, habits and images. The illusion which we recognize, which prevents our giving to ourselves an accurate account of certain qualities of things which we look at, can be used in turn in the illusion of the works of art. The impression of sight connected with the impression of the hand. Hence the touch can designate the mind of the painter. Time in execution of the work of art not a measurable quantity. Execution of the work of art implies the joining together of former memories to the perceptions of the moment. Hence the necessity of constant purification of our memories. Hence the use not only of our own, but of the memories of others.

Sixth lecture—The contemplation of nature has moved the mind of man to expression. Its contradiction makes us realize in art an order made by us according to our reason. In the work of art man is the measure of all things. Meaning of the word design. Confusion in the work of art of methods belonging to different memorial systems. This confusion a blot in the logically balanced world of art, and usually brought about by appropriation of the works of others. Self-righteousness and belief in made-up formulas. Dependence upon a grammar meant for other purposes. The formulation of practice and principle. Consequent dishonesty. Every complete record of sight must contain a record of our ignorance. The attitude of



THE SOLIO DEMONSTRATORS.

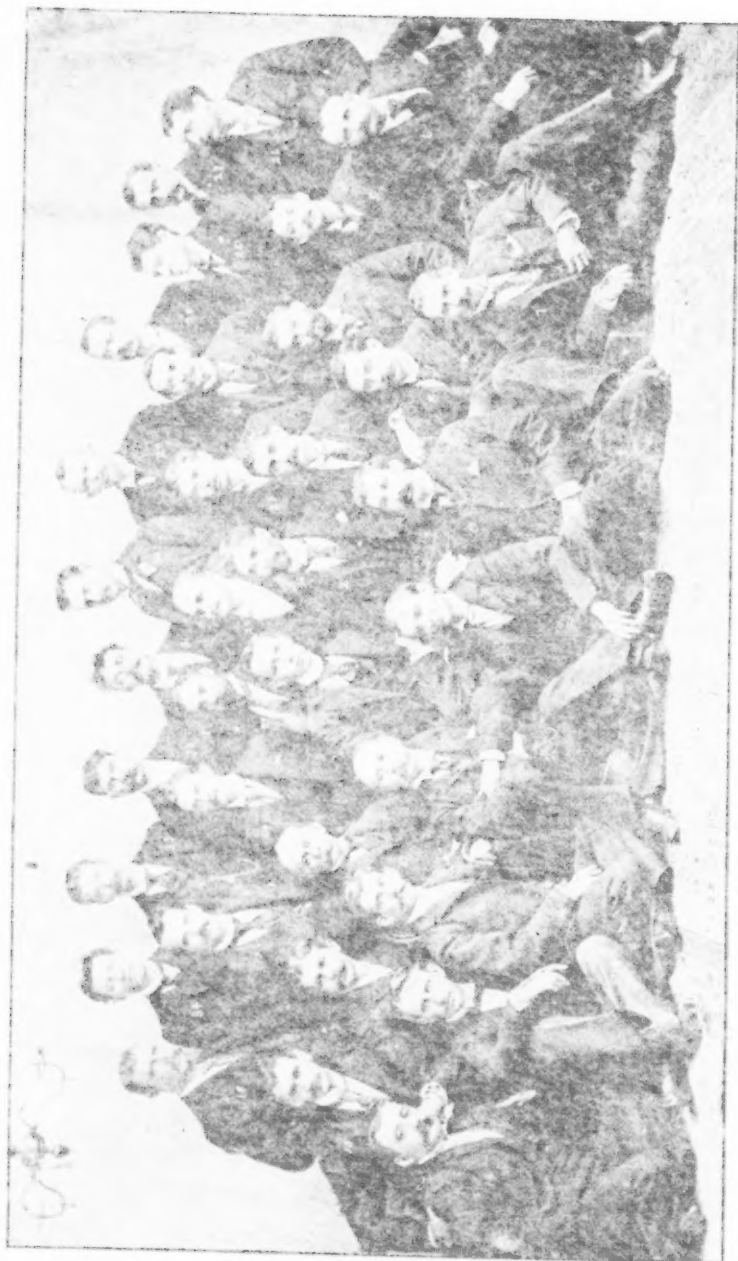
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| 1—S. H. Mora, <i>Mgr. Solio Dept.</i> | 22—W. P. Gerhardt, | 29—L. H. Parmelee, |
| 2—L. B. Jones, <i>Adm. Mgr.</i> | 23—A. C. Brace, | 30—J. B. Guthrie, |
| 3—W. C. Marshall, | 24—F. H. Thompson, | 31—F. P. Bushnell, |
| 4—C. C. Matthews, | 25—W. H. Boardman, | 32—F. Hill, |
| 5—H. W. Kelly, | 26—C. F. Lee, | 33—H. K. Smith, |
| 6—J. E. Allen, | 27—C. A. Campbell, | |
| 7—W. H. Humphreys, | | |
| 8—C. H. Fairbanks, | | |
| 9—H. W. Robertson, | | |
| 10—R. G. Holloway, | | |
| 11—E. G. Adams, | | |
| 12—E. H. Wright, | | |
| 13—E. L. French, | | |
| 14—W. H. Crowell, | | |
| 15—W. H. Allen, | | |
| 16—F. S. Godfrey, | | |
| 17—C. H. Chase, Jr., | | |
| 18—W. H. Chase, | | |

the child. It is absurd to copy the memories of others so as to pass them off as our own: It is possible to copy them so as to purify our own. Donatello, Pisano, Raphael, Michael Angelo, Rubens. As our art is composed of visual memories, or affected by them, so memories of thought outside of what affects handiwork will either elevate or degrade art. The subject is merely the place where we express ourselves. The sculptor Socrates, the painter Euripides and Pyrrho. There is no art without a soul. Master of all methods that can avail. Good language is learned by living among people who can themselves speak well.

THE VARIABLE ACTINISM OF SOLAR LIGHT.

BY G. A. SAWYER, U. S. A.

PROBABLY the scientific reader will at once object to the title of this article and say that solar light is invariable, and that any apparent changes are due to atmospheric causes; however that may be, the phenomenon is well known, but it may be recommended to the photographic fraternity to call attention to certain phases of its manifestation, with the hope that the busy photographer may take into account some elements of uncertainty in his exposures, which it is thought are too often neglected. Photographers recognize the enormous changes which occur as we approach or recede from the hour of high-noon, and the *Photographic Annual*, for instance, gives a table of comparative values, and comparative light exposures, showing the changes which take place from hour to hour, day by day and from day to day. It is, however, always assumed that the light on July noon is practically the same as that on the following July noon, and that the light on one July day differs in no appreciable quality from that of the succeeding July, but every practical photographer knows that such is not the invariable fact: only when an eclipse occurs which might be fairly laid to this cause, it is laid to something else which may in fact be quite different. We never make progress when we ascribe our mis-



THE SOLIO DEMONSTRATORS.

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| 1—S. H. Mura, <i>Secy. Solio Dept.</i> | 20—L. H. Parmelee, |
| 2—L. B. Jones, <i>Asst. Secy.</i> | 21—J. B. Githrie, |
| 3—W. C. Marshall, | 22—F. R. Nichols, |
| 4—A. W. H. H. H. | 23—J. H. H. H. |
| 5—C. H. Fairbanks, | 24—W. P. Garbutt, |
| 6—H. W. Robertson, | 25—J. C. H. H. |
| 7—R. C. H. H. | 26—J. H. H. H. |
| 8—L. H. H. H. | 27—J. H. H. H. |
| 9—J. H. H. H. | 28—J. H. H. H. |
| 10—J. H. H. H. | 29—J. H. H. H. |
| 11—J. H. H. H. | 30—J. H. H. H. |
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| 13—J. H. H. H. | 32—J. H. H. H. |
| 14—J. H. H. H. | 33—J. H. H. H. |
| 15—J. H. H. H. | 34—J. H. H. H. |
| 16—J. H. H. H. | 35—J. H. H. H. |
| 17—J. H. H. H. | 36—J. H. H. H. |
| 18—J. H. H. H. | 37—J. H. H. H. |
| 19—J. H. H. H. | 38—J. H. H. H. |

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All photographers recognize the enormous changes which occur as we approach or recede from the hour of high-noon, and this photographic *Annual*, for instance, gives a table of comparative light values, and comparative light exposures, showing the changes which take place from hour to hour, day by day and month by month. It is, however, always assumed that the light on Monday noon is practically the same as that on the following Tuesday, and that the light on one July day differs in no appreciable quality from that of the succeeding July, but every practical worker knows that such is not the invariable fact: only when trouble occurs which might be fairly laid to this cause, it is usually laid to something else which may in fact be quite innocent. We never make progress when we ascribe our mis-

takes to the wrong cause: when, on the other hand, we once know what is wrong we are on the high road to the proper remedy, and it is to this point that it seems desirable to draw attention.

Besides the changes which occur from day to day there are others due to the variations in seasons which are quite inexplicable, but which are nevertheless interesting and worthy of note as exercising a potent influence upon the character and success of our work.

The subject is best illustrated by examples. To premise it may be proper to state that the experiments and observations from which my conclusions herein are drawn have all been conducted under exactly similar conditions year by year in the same locality, in fact nearly all my photographic work is done during rather a long vacation at Lake George, New York. Here we have, as a rule, favorable conditions. In summer the air is pure and dry, rarely obscured by fogs. The days are apt to be bright and sunny, and except for an occasional fire in the woods, which gives us some smoke, happily getting of rare occurrence of late years, nothing mars the delicious quality of nature's efforts at her best to make a happy hunting-ground for appreciative mortals.

For snap-shot work I use a detective camera with a six-inch Dallmeyer Rapid Rectilinear lens. Stop $f-16$ or larger with a slow shutter. For the whole season of 1889 it was found almost impossible to get properly-timed exposures, and the aperture was enlarged to $f-12$ or $f-10$, with but little better effect. In August we had a visitor, one of the most skilful members of the New York Camera Club, and he was faithfully warned that the sun was off duty, and that it would be necessary to limit drop-shutter work to a very narrow interval before or after noon on bright days. With the confidence begotten of hundreds, perhaps thousands, of successful exposures all over the world with rarely a failure in development, he made some 135 exposures, and got, on his return home, less than two dozen thin negatives; and he generously wrote me, admitting that my advice was justified.

During the summer of 1891 the Rev. Dr. B., a well known and distinguished New York divine, as clever at photography as

in bringing sinners to repentance, went out one day, and from the deck of a little yacht made twenty-four exposures and produced an equal number of negatives. The very next day, under conditions of light and atmosphere positively identical so far as our senses were capable of estimating, he exposed twenty-four plates and got an equal number of blank failures. He naturally laid the mishap to the plates, but the plates were not probably at fault at all—nor was the worker, but, to my mind, the evidence was clear that the light had gone off.

One other example. Last summer, the summer of 1893, was a peculiarly brilliant one. Almost the first exposure made by me was on an open landscape, a corner of a hayfield full of blooming wild flowers, at close range, with trees and shrubbery for a background. With a Carbutt Eclipse film, Dallmeyer R. R. $6\frac{1}{2} \times 8\frac{1}{2}$ lens, stop $f-40$, an exposure of about a second gave an excessively overtimed negative. A temporary hard-rubber diaphragm, perforated with an aperture of about $f-70$, with an exposure of a second or less, still gave over-exposure. Under ordinary conditions my experience would have called for an exposure with $f-40$ of about two or two and a half seconds.

We had in our garden a bed of California poppy, the *escholtzia*, yellow and orange colors. They were only fully open and the light and shades right for about an hour or so, between 9 and 10 a.m. each morning. To get the color values I used an orange screen and orthochromatic film and the lens within five feet of the bed, with $f-20$. Four seconds exposure gave a correctly-timed negative. Under the usual conditions of light for such a subject I do not think thirty seconds or more would have been excessive.

On subjects not including anything nearer than say one or two hundred yards, landscapes, mountains, water, etc., I found with $f-20$ and a color screen I could use a drop shutter and get correctly-timed negatives developing in two or three minutes without forcing.

All my earlier experience with color screens had involved prolonged exposures, and while their use with a drop shutter may not be uncommon to others, I had not previously met with any conditions which suggested such a possibility.

From careful comparisons I feel convinced that for two or three months, in my particular locality at least, the actinic quality of the light last summer was fully from four to six times above anything within the range of my previous experiences, and I am equally convinced that at times I have found it from two to four times below normal. Of course I do not mean hazy days, or days when there was a yellow pall over the sun, but on days when no change was perceptible to our ordinary powers of comparison.

Should these suggestions turn out to be facts and not fancies, it behooves the prudent worker, whenever he can, to make a trial exposure and develop his plate on the spot, and thus determine so far as possible the actual conditions of light under which his work is being done. For there is here an element of uncertainty which has not always been sufficiently taken into account.—*American Annual of Photography.*

Some Curious Customs.—Hindoo women are forbidden to read or write. Indeed those who dare to indulge in such luxuries are often "accidentally" missing.

Jewish women of the higher classes were secluded from public life and passed their time with the distaff and spindle. At marriage the ceremony lasted seven days.

In China a wife is never seen by her future master. Some relative bargains for the girl, the stipulated price is paid, and she is afterward a submissive slave.

The women of ancient Rome were treated with the greatest respect. Still they were not allowed to inherit property, and could be divorced by their husbands for counterfeiting their keys and for wine drinking.

In Turkey woman is held in the most rigid seclusion. She must always appear veiled. With pigs and dogs she is forbidden to enter a mosque, and the Koran declares a woman who is unmarried to be in a state of reprobation.

Siberian women are raised as abject slaves, untidy in dress, and are bought with money or cattle. The most capricious whim of her husband is law to the Siberian woman, and should he desire a divorce he has only to tear the cap from her head.

MULTIPLE PHOTOGRAPHY.

SOME years ago a dressmaker advertised her business by hiring a theatre and appearing in her newest costumes on the stage; this winter an equally enterprising woman has hit upon an equally ingenious if not equally spectacular device. Her brother is a photographer in the same building, and by arrangement with him her customers who spend money in pleasing amounts have the privilege for a nominal sum of posing in their new gowns for multiple photographs. Do you know multiple photography? It appeals particularly to the wearers of smart gowns. By a simple enough arrangement of lenses and mirrors you pose once and are taken from three to eight times. You see the front of your dress, the sides of it, the back, all upon one negative and in the same instant of time. You see yourself as a dozen people see you from every corner and standing spot in the room. You get the impressions of a whole evening party about yourself and know beforehand whether you are going to conquer or make a fizzle. It's a great satisfaction; that is, if the dress—and your figure and your back hair—will stand looking at all around.

A young woman who tried it gave me one of the resulting photographs. It shows her in one of the most attractive evening dresses of the winter—black velvet with a dazzling display of shoulders. That young woman can frame herself and hang herself up in her boudoir and study herself every time she prepares to go out until she decides just which pose will suit best her designs on her favored admirer, full face, head a little to one side, or turned to give him the full benefit of the nape of the neck and coil of soft, dusky hair. If the proper study of womankind is woman that girl is better equipped than most of us.

It is the extravagant man who is likely to argue most with his wife about "economy." His vest pocket is stuffed with "twenty-five cent cigars," while he insists that "fifty cents is enough to pay for a pair of baby's shoes."

The Editorial Dropshutter.

Canadian Photographic Journal.—A disastrous fire occurred in the city of Toronto on Sunday morning, January 6th, and completely destroyed the issue of that journal for the month of December that was to have been ready for mailing on Monday the 7th, also everything connected with the *Journal*. For this reason the publishers are unable to issue a *Journal* for December. They are now at work on the issue for January, having already made arrangements with a new firm of printers.

The publishers and editor have our sincere sympathy in their misfortune, and we trust that they may not be serious losers by the calamity. The *Canadian Journal* is a clean, bright, and well-edited periodical, that deserves the full support of the Dominion votaries of the photographic art.

A Demonstrative Convention.—It takes a big concern to have traveling men enough to hold a convention all of their own, but that's what the Eastman Kodak Company demonstrators were doing when the New Year came in. The commercial tourists to the number of thirty-three gathered at the Hollenden in Cleveland on December 31st, and for two days were engaged in holding business sessions. All the printing-out papers were discussed and compared with Solio. Everybody was supposed to relate an experience that would be of benefit to the brother demonstrators, and all told of their successes and failures. The relative qualities of gelatine and collodion papers, the combined and separate baths, were freely discussed, and how best to approach the photographers was a object that had careful consideration.

On another page we give a half-tone reproduction from a photo-by Decker, which shows what an enterprising looking lot of men the Eastman demonstrators are. These wide-awake fellows cover the country from Maine to California in the interest of their employers, and since the convention every one of them is loaded to the muzzle with arguments in favor of their popular paper, and with their big supply of ammunition they will make the campaign of 1895 a lively one. We understand that the Eastman people will soon have an able corps of Western Collodion men out, who will demonstrate the excellencies of the new paper to those who prefer collodion to gelatine.

New Year's evening the demonstrators sat down to a banquet at the Hollenden, which had been liberally provided by the Company, and with them at the festive board were Mr. H. M. Fowler and Mr. H. M. Slater, the well-known Cleveland stock dealers. Everybody had a rare good time, and enjoyed the relaxation after the two days of solid business sessions. Mr. S. H. Mora presided, and felicitously proposed the toasts, which were responded to.

Academy of Natural Sciences.—At the regular meeting held January 15th, Dr. Charles L. Leonard read a paper upon a "New Method of Studying Cell Motion." The subject was profusely illustrated by lantern slides made from instantaneous photo-micrographs. Some of these slides represented blood corpuscles magnified about 40,000 diameters. The peculiarity of these slides was that they only represented such portion of the field as represented movement or cell motion.

Odd Mirror Superstitions.—This mistrust of the ghostly mirror is so old and so far-spread that we meet with it in the folk-lore of every land. An old tradition warns us that the new moon, which brings us such good fortune when we look at it in the calm evening sky, carries a message of evil to those who see it first reflected in a looking-glass. For such unlucky mortals, it is said that the lunar virus distils slow poison and corroding care. The child who is suffered to see its own image in a mirror before he or she is one year old is marked out, it is asserted, for trouble and many disappointments. And, again, it is declared that the friends who glance at their reflections standing side by side, are doomed to quick dissension. In Scandinavia the Swedish girl who looks into her glass by candle light is told that she risks the loss of her lover. One superstition in this connection that seems to be almost universal is that it is very unlucky for a bride to see herself in a mirror after her toilet is completed. If she be discreet she will turn away from that fair picture which pleases her so well, and then draw on her glove, or have some tiny ribbon, flower or jewel fastened to her gown that the sour fates may be appeased and evil turned away from her threshold.

G. Hanmer Croughton.—A former member of the Philadelphia Photographic Society is a mad man. The cause of his anger is best told in his own words as he related the story to a *Post Express* (Rochester, N. Y.) reporter this morning: "My son and I went to Rochester Junction yesterday for a little rabbit shooting. We reached the Le-

high Valley depot on South St. Paul street at 6 p.m. yesterday. As soon as we alighted from the train three rough looking fellows accosted us and said they were going to search us. I asked their authority, and one of the fellows showed me a constable's shield, at least that was what I took it for. I handed him our game bag, and he found only a rabbit in it. He then said he would have to search us personally. I told him I would not permit that in a public place and he then said he would have to take us to the police station. My son was inclined to resist but I advised peaceable submission, and we suffered the indignity of being marched through the streets, handcuffed together like two thieves, to the police station. There we were searched in the public room. When nothing was discovered of a contraband nature we were told we could go. I asked who the leader of the trio was. At first he paid no attention, but finally he drew himself up, posed grandiloquently and said, 'I am Schwartz.' I replied, 'Well, Mr. Schwartz, you have made the biggest mistake of your life.' I shall not let the matter rest, that you may be certain. I have instructed my attorney to proceed against Mr. Schwartz, either civilly or criminally, as he thinks best. I have no animosity against Mr. Schwartz, but he should be taught that there is law and justice in the land, and that he must not be a law unto himself."

A Versatile Artist.—We have received a business card, which sets forth that "Philpot, deals in pianos, sewing machines and fine photography, crayon and pastel portraits a specialty, a great line of picture frames always in stock. Tuning and repairs attended to with neatness and dispatch. All work warranted; written guarantee given for one year.

Boston Camera Club.—An exhibition of small camera work, by members of the Club, was placed on view to the public at the club-rooms from Wednesday, January 16th, to Saturday, January 26th, inclusive.

Lantern-Slide Contest.—With a desire that the interest and activity in slide-making may be continued, the Lantern-Slide Committee of the Boston Camera Club, as a prize competition, propose the following:

Four negatives of different qualities have been selected, from which each competitor must submit one slide from each.

Each set thus entered will be submitted to three members, who will be selected to act as judges; and a prize, to be decided upon later, will be given for the best set.

Minneapolis Camera Club.—An entertainment was given at the club-rooms, Wednesday evening, January 16th, consisting of a nicely written description of scenes in the "Cotton Belt" States, and also the Salmon Fisheries of the Northwest, illustrated with fine lantern slides.

California Camera Club.—The regular monthly meeting was held Tuesday, January 8th, 1895, in the club-rooms, Academy of Sciences Building, at 8 p.m.

Late Literary News.—General Lord Wolseley makes a most important contribution to the literature of the China-Japan war. In an article for the February *Cosmopolitan*, he discusses the situation, and does not mince matters in saying what China must do in this emergency. Two other noted foreign authors contribute interesting articles to this number. Rosita Mauri, the famous Parisian danseuse, gives the history of the ballet, and Emilie Ollivier tells the story of the fall of Louis Philippe. From every part of the world, drawings and photographs have been obtained of the instruments used to torture poor humanity, and appear as illustrations for a clever article, by Julian Hawthorne, entitled, "Salvation via the Rack." Mrs. Reginald de Koven, Anatole France, W. Clark Russell, Albion W. Tourgee, and William Dean Howells are among the story tellers for the February number of *The Cosmopolitan*.

Ross and Company, of London, announce that they have made arrangements by which G. Gennert, 24 & 26 East 13th St., New York, will assume entire control of their American business, who, as sole American agent will keep a complete line of the celebrated Ross lenses, also of the Ross Zeiss lenses, made under the license from Carl Zeiss, Jena, and the newly invented Goerz Double Anastigmats which they have for some time past made as sole licensees of C. P. Goerz, Berlin-Schönberg. This new arrangement will prove of great benefit to the fraternity at large.

"**Look here,**" said the parent to the school-teacher, "I see that one of the lines in my boy's copybook is, 'Less haste, more speed.'"

"Yes."

"And here's another that reads, 'The longest way round is the shortest way home.'"

"Yes."

"Well, I want it stopped. I don't want those mouldy proverbs festooned around his intellect. I'm educating him for business, not the United States Senate."

Photographic Prints and Formulæ.

Liesegang's Aristotype Paper.—Ed. Liesegang, of Dusseldorf, has put a new matt "aristotype" paper on the market, and gives the following directions for its use:

The Printing.—To be carried till the darkest parts are of a slightly bronze color. It is not necessary to tone the prints at once, they may be kept for a long time in a tin box or wrapped up in black paper.

The Washing.—In washing, the prints must be placed face downwards, one by one. The water must be changed several times until there is no appearance of milkiness. The first washing may be continued from three to five minutes.

Never wash in a strong light.

The Gold Bath.—Any good gold bath may be used for toning, provided it be not too strong.

Stock Solutions.—

A.—Water	2 ounces.
Chloride of gold	2 grains.
B.—Water	2 ounces.
Sulphocyanide of ammonium	30 grains.
Hyposulphite of soda	1 grain.

Mix together by one part of A being poured into an equal part of B, in no case the reverse; dilute with water if necessary.

Keep the bath a few hours before using it; it must be quite colorless. It gives a purplish tone, or if the hyposulphite be omitted a warm chestnut brown color. Without hypo the bath will keep for some time.

The Toning.—If the margin of the print tones quicker than the centre, the gold bath is too strong, and must be thinned down with water. By using an alum bath before the toning, the action even of a strong gold bath will be quite equal; but it is certainly better to tone slowly, because a strong bath is likely to make the tone of the print lathy, whereby it loses its brilliancy, while by slow toning a fine, vigorous tone will be obtained, ranging from the richest chestnut brown to velvety black. Some operators tone not more than two prints at once; it is well not to have too many prints in the bath, because it is necessary to have them under control, that they may not be over-toned.

A little care must be taken in placing the prints in the bath. With the right hand take the prints from the washing dish and submerge them one by one in the toning solution. Each print must be thoroughly and evenly wetted and kept in motion, or unequal toning will be the result.

On immersion in the sulphocyanide bath, the prints will be observed to turn quite yellow, and then almost immediately into a brown, and then into a purplish brown tone. As soon as the last-mentioned color is assumed, they should be taken out and placed at once by the left hand (which must on no account come into contact with the other baths) into the fixing bath without washing. If the toning bath contains too much gold, the prints will not become yellow, but immediately blue; more water should then be added.

The Fixing Bath.—

Hyposulphite of soda 1 ounce.
Water 10 ounces.

should be kept as far apart as possible from the other baths, and the prints taken from the toning bath with the right hand, delivered into the left, and with the left hand placed in the fixing bath.

From five to ten minutes is generally sufficient, but by holding the prints up to the light, it can easily be seen if they are thoroughly fixed. If the prints are left too long in the fixing bath, the light half-tones might become yellow.

The Acetate Bath.—

(a) Dissolve 15 grains of chloride of gold in 80 ounces of pure water.

(b) Saturated solution of acetate of soda, fused (not in crystals).

For toning say one hundred cabinets, let 30 good drops of solution *b* fall into the clean dish, then add 8 ounces of solution *a*, mix and let stand for an hour.

The bath can only be used once; 200 prints may be toned in time of one hour.

The phosphate bath, for bluish black tones:

Water 25 ounces.
Sulphocyanide of ammonia 1 ounce.
Phosphate of soda 1 ounce.

A few hours before toning add to 10 ounces of this solution a solution containing 5 grains of chloride of gold in one ounce of water. After this bath has been used add some more of the gold solution; it can then be used again.

The Drying.—Hang the prints over blotting-paper to dry.

The mounting is done in the usual way, just as with albumen prints.

Burnishing must not be done before the prints are thoroughly dry. Lubricate with Castile soap and alcohol. Run through the machine from a different corner every time slowly, being not too hot.

Should, however, a highly, glossy appearance equalling glass in appearance, be desired, the following is the method of obtaining it. Some glass plates, large enough to hold half a dozen cabinets on either side, a solution of one part of ceresin or wax in two or three parts of turpentine, two sheets of flannel, a supply of blotting-paper, and a squeegee are required.

Lay a sheet or two of the paper upon the table, upon which place the glass plate, thoroughly clean. Then dip the flannel into the wax solution, and rub the glass well all over; now, with a fresh piece of flannel rub again till the surface is evenly coated. The prints being thoroughly washed, take them out of the water one by one, and lay directly upon the glass plate; having filled the one side, place a sheet of blotting-paper over the whole, and press well.

Now, remove the paper, and go over each print separately with the squeegee, removing all the air from between the face and glass, and again take up all the superfluous water with the blotting-paper. Now, turn the plate over, and repeat the operations upon the other side.

When thoroughly dry, by placing a knife under one of the corners, the print will peel off with the desired surface. By the same process, but by employing a matt or ground glass, a matt surface equal to an engraving can be obtained.

Instead of a glass plate a glossy ferrotype plate or a sheet of polished vulcanite may be used, in this case no wax is used, only the plates are cleaned with a wet sponge before applying the print.

When half dry, brush starch paste (or any other cement preferred) over them, and allow to dry altogether; when perfectly dry the prints will peel off the glass with greatest ease. To mount, sponge the cards and place the prints (after trimming) in contact, and immediately pass through rolling machine and the work is done.

For spotting out and retouching use Liesegang's glossy retouching colors.

If much retouching is done on a print it may be useful to pass some gelatine solution over the touched parts, to let dry, and then to squeegee upon the glass or vulcanite plate.

To mount the glossy prints some operators use the following method:

After the print has been pressed in contact with the waxed glass or the vulcanite plate, a sheet of strong white paper is glued over it; the dry print is removed, cut to size, and mounted upon cardboard in the usual way, or at the edges only.

Dr. Eder, in the following table, gives the number of drops required to make a cubic centimeter, showing the variations in the size of drops of different liquids:

Water	20
Hydrochloric acid	20
Nitric acid	27
Sulphuric acid	28
Acetic acid	38
Castor oil	44
Olive oil	47
Oil of turpentine	55
Alcohol	62
Ether	83

Glycin Developers.

Glycin	240 grains.
Carbonate of potash	2½ ounces.
Sulphite of soda	2½ "
Water to	10 "

dilute with three to six times its bulk of water. Compared with metol, it is decidedly slower, and gives less detail and more vigor. Hydroquinone gives still less detail and more hardness than glycin. A glycin developer suffers a greater loss of power than one of metol by use or by standing, therefore the same quantity cannot be used repeatedly with much success. By using more sulphite than four to one of glycin, little if any change is produced, and in this it differs from metol, and especially from amidol.

Mallmann's Argentotype or Printing Process with Ferric Oxalate and Silver Nitrate.—This process is suitable for flat and somewhat foggy negatives, and cannot be used for brilliant ones. The following solutions are prepared and will keep in the dark:

A.	
Distilled water	100 c.c.
Ferric oxalate	20 grammes.
B.	
Distilled water	100 c.c.
Silver nitrate	16 grammes.

For use mix

Solution A	8 c.c.
Solution B	3 c.c.

This solution should be spread on smooth or rough-surfaced paper by lamplight with a round hog-hair brush, and then dried over a spirit or gas lamp. For every sheet of paper about 5-10 c.c. of solution are required. Starch or dextrine can be added if desired, and brownish tones are obtained on toning afterwards with platinum. Two grammes of starch are boiled with 80 c.c. of distilled water, and 20 grammes ferric oxalate added; the solution should be filtered through muslin, and 5 c.c. of 5 per cent. carbolic acid added. For dextrine 8 grammes are merely dissolved in 100 c.c. of distilled water, and 5 c.c. of carbolic acid added. For glazed papers dextrine is not advisable. It is printed in the usual way, and the image appears reddish on a yellow ground, and as soon as the details in the high light appear the paper is removed and developed on

A.	
Distilled water	1000 c.c.
Potassium oxalate	160 grammes.

(This solution should, if not acid, be acidulated with a little oxalic acid solution.)

B.	
Distilled water	100 c.c.
Potassium bichromate	4 grammes.

For use mix

Solution A	100 c.c.
Solution B	12 drops.
Strong nitric acid	4 drops.

When developed the print is washed in three lots of distilled water acidulated with nitric acid, then rinsed in ordinary water and toned in

A.	
Water	1000 c.c.
Lead nitrate	10 grammes.
Hypo	25 grammes.

B.	
Solution gold chloride	1 per cent.

For use 2 to 3 c.c. of B are added to every c.c. of A. Any tones can be obtained. These prints can be toned with uranium and platinum, and intensified with

Water	1000 c.c.
Glacial acetic acid	30 c.c.
Pyrogallol	1 gramme.

to which a few drops of 10 per cent. solution of silver nitrate have been added. They can be reduced by continued soaking in a rather stronger nitric acid washing water.

Platinum Toning.—In ordinary gold toning, at the most one-fourth of the silver is replaced by gold, and the result is a mixture of blue gold and red silver. In platinum toning there is only black platinum, but hard negatives are required to give the black color of platinum prints. As all the silver is replaced in platinum toning, over-toning is impossible, and the image does not change during fixing. To obtain the vigor necessary the print may be developed when half printed out. The toning bath recommended is

Chloro-platinite of potassium	1 gramme.
Nitric acid	5 c.c.
Water	1000 c.c.

Photographischer Almanach un Kalendar fur 1895.—Düsseldorf: Ed. Liesegang Verlag. Dr. Liesegang's annual for the year contains three portraits worthy of special mention, viz., a fine heliogravure of Victor Angerer, a process block of Herr Cronenberg and a half-tone of the late Francis Bedford. Among the contributors we find Victor Schumann, Peter Von Standenheim, J. Gaedicke, Dr. Schnauss, and others of equal promise. It contains a complete direction of the German photographic societies and the usual amount of formulæ and tabular matter. The book is compact and handy, and of great practical value to the German photographer.

Mounting Photographs.—The satisfactory mounting of photographs is a troublesome operation, and the following suggestion from a contributor to the *Outlook* may be of assistance to amateurs: I have found a method by which a photograph or engraving can be mounted on the thinnest paper without curling or wrinkling. If the picture is a photograph, it should be ironed out smooth with a hot iron and then trimmed. Mix a little gum arabic in hot water, so as to make a rather thick mucilage. Place the picture on the page in position, and mark just inside the corners. Remove the picture and take some of the mucilage on a ruling pen, and draw a heavy line of mucilage from one point to another, so as to make a line of mucilage all around the place where the picture is to be. As soon as the mucilage is sticky, put the picture in place, and a book over it to keep it flat. When dry, you will have a smooth mount that will not curl.

The doctrine that enters only into the ear is like the repast one takes in a dream.—*Chinese.*

In the Twilight Hour.

THE tallest peaks rise most conspicuous but are smitten fiercest by the storm.

A MAN never has so much use for his watch as when listening to a long sermon.

OUR blessings outnumber our ills as do sunny days outnumber those that are dark and dreary.

THE "roses and raptures of vice" not only quickly fade but leave malignant odors behind.

How to find your place—take the lowest one; you will then come soon enough to the right one.

THE devil will plaster and paint the blackest sin until it looks as white as an angel's wing if you will listen to his excuses.

IF you want to find yourself in the mud and under the feet of men, try to crawl over their heads for the sake of your own self-interest.

THE man who never has opinions, who tries to sit on the fence, is like one who attempts the folly of sleeping in a bed of nettles, which, every way he turns, increases his difficulty.

DESPONDENCY is not a state of humility. On the contrary, it is the vexation and despair of a cowardly pride, nothing is worse. Whether we stumble or whether we fall, we must only think of rising again and going on in our course.—*Fenelon.*

SOME one has said: "Stretching out his hand to catch the stars, man forgets the flowers at his feet, so beautiful, so fragrant, so multitudinous, and so various." How many times, in trying to grasp that which is beyond our reach, we leave untouched and unseen the bits of happiness close to our hand!

WE never are, but are forever only becoming, that which it is possible to be.—*Caird.*

WHAT might have been life's greatest victories are often lost for want of a little courage.

To so many of us it is all up hill when we want to go, and all down hill when we want to stop!

IN matters of conscience first thoughts are best; in matters of prudence, last thoughts are best.—*Robert Hall.*

TRUE self-denial is the triumph of the higher over the lower self. It is a victory for good, not a sacrifice or a burden.

SPITE and ill-nature are the most expensive luxuries in which one can indulge. Remember that, young people, and older people, too.

MANY persons keep a runaway tongue and an unruly temper, with results to themselves and others far worse than those which come with a runaway horse.

SOME self-important egotists think themselves so nearly all the world, that they would measure their own circumference as about twenty-five thousand and five hundred miles.

THE forests grow out of the air much more than from the soil; thus the life of the soul is "from above." The element of soul growth is a spiritual atmosphere, not the clods of sense about—beneath us.

WE know not exactly how low the least degree of obedience is which will bring a man to heaven; but this we are quite sure of, that he who aims no higher will be sure to fall short even of that, and that he who goes farthest beyond it will be most blessed.—*John Keble.*

BARGAIN LIST.—FEB., 1895.

Lenses:

1—Set 1-9 Lenses,	\$15 00
1—3 B Dallmeyer lens for cabi-	
nets	130 00
1—4x5 R. R. Gundlach Lens, . . .	7 00
1—5x7 R. R. Dallmeyer Lens, . . .	25 00
1—4x5 Wide Angle Lens	4 50
1—5x8 " "	6 00
1—6½x8½ " "	8 00
1—8x10 " "	10 00
1—11x14 " "	18 00
1—5x7 Euryscope Lens with Prosch	
Shutter	35 00
1—½ size Usiner Lens	12 00
1—¼ " "	8 00
1—No. 1 6½x8½ Euryscope Lens,	
list 45 00	30 00
1—6½x8½ Gundlach Single Lens . .	3 50
1—16x20 W. A. Darlot Lens	35 00
1—8x10 View Lens and Shutter . .	12 00
1—8x10 R. R. Gundlach Lens . . .	16 20
1—Pair Waterbury Stereo Lenses . .	4 50
1—8x10 Waterbury Lens	5 00
1—Cabinet Portrait Lens	20 00
1—8x10 Peerless Portrait Lens . . .	30 00
1—Set 1-9 Gem Lenses	18 00
1—4x5 Darlot Wide Angle Lens . . .	10 00
1—R R Detective Camera Lens . . .	3 00
4—½ tubes in plate	12 00
1—½ Voigtlander Lens	9 00
1—6½x8½ E. A. Single Lens . . .	5 00
1—4-4 Harrison Portrait Lens, no	
stops	16 00
1—4-4 Jamin Globe Lens	12 00
1—¼ size Holmes, Booth & Hay-	
den Lens	4 00
1—¼ size Harrison Lens	4 00
1—¼ size Gem Lens	1 50
1—5x8 R. O. Co's. Single Lens . . .	2 50
1—¼-size Voigtlander Lens	6 00

HAND CAMERAS.

1—No. 1 Kodak,	10 00
1—A Ordinary Kodak, new, . . .	5 00
1—5x7 Folding Kodak, new, list	
\$65,	55 00
1—4x5 Climax Detective Camera,	
leather-covered, new, list \$32 . .	20 00
1—4x5 Turnover Camera, new,	
list \$25	15 00
1—4x5 Montauk Detective Cam-	
era, new	20 00

VIEW CAMERAS.

1—4x5 New Model Improved Cam-	
era, Wray lens, 6 extra holders, 28	00
1—5x7 Wet Plate Camera	2 00
1—6½x8½ Eastman Camera, 3	
holders, Magister R. R. Lens, 40	00

1—5x7 Victoria Camera and 4	
lenses	\$18 00
1—5x8 New Model Camera, three	
holders	10 00
1—4¼x6½ Universal Camera, six	
holders, tripod, Euryscope	
lens and Prosch shutter, all	
in good order	60 00
do do without lens	25 00
1—5x7 Victoria Camera	8 00
1—8x10 Eastman Reversible Back	
Camera	25 00
1—3¼x4¼ New Model Improved	
Camera, new,	9 00
1—5x8 Blair Camera, 6 holders,	
8x10 Attachment, 5 holders,	
and Euryscope lens,	45 00
1—6½x8½ Novelette Camera,	
new	20 00
1—5x8 Blair Single Swing View	
Camera	15 00
1—6½x8½ American Optical	
Co.'s first quality View Cam-	
era, new	20 00
1—5x8 Wet Plate Stereo. Camera,	
3 holders, case and tripod . . .	20 00
1—5x8 Tourist Outfit, 2 Daisy	
Holders, tripod and case	25 00
1—5x7 Blair Rev. Back Camera,	
new	25 00
1—5x8 Boston Rev. Back Camera,	
new	25 00
1—Eclipse Outfit, 3¼x4¼,	2 00

PORTRAIT CAMERAS.

1—11x14 Portrait Camera, with	
8x10 back and holder	60 00
1—8x10 Double Swing Portrait	
Camera	15 00
1—8x10 Double Swing Portrait	
Camera with Benster Holder,	
new	25 00
1—5x7 Victoria Ferrottype Camera	
	9 00

Accessories:

PROFESSIONAL.

1—8 ft. Show Case	12 00
1—20x24 Glass-bottom Tray . . .	2 00
—Large Oak Show Frames, each . .	5 00
1—8x10 Knickerbocker Camera	
Stand	5 00
1—Corner Chair, Drab Velvet,	
list 20.00	10 00
7—6½x8½ Perfection Holders for	
Universal Camera, each	1 15
1—No. 2 Combination Tripod, list	
3.50	2 50
1—Cooper Enlarging Bromide	
LanterP, 8 in condenser	40 00

1—11-in. Acme Burnisher. . . .	12 00	1—Seavey Swiss Cottage	8 00
13—6½x8½ Dry Plate Kits, assorted openings, each . . .	25	1—Osborne's Rock Accessory, new,	10 00
1—Air Brush	25 00	Lot of second-hand backgrounds, 8x8 and 8x10, \$5.00 to \$9.00; write for particulars.	
Lot of Picture Mats. Write for particulars.		Peerless Varnish Pots, each . . .	40
1—Acme Print Trimmer, new, . .	10 80	Pearl Leads, the best retouching points in the market, each . .	15
1—Baldwin Print Cutter, " . . .	14 00	2—7x9 Flat Printing Frame, each	40
7—6½x8½ Book Holders for New Model Camera, each	1 20	10—6½x8½ Attwood's Printing Frames, each	40
1—14x17 Printing Frame	1 00	1—Osborne's Pillar Accessory . .	15 00
1—Air Brush	30 00	Full line of Packard Bros.' 6x8 Grounds <i>in stock</i> . Interiors \$5.00; exteriors, \$4.00; send for samples.	
1—14 in. Entrekin Eureka Bur- nisher	18 00	1—18x22 Deep Printing Frame . .	2 50
1—6x8 Children's Background . .	3 00		
1—6x8 Children's Background . .	4 00		
1—8x10 Bryant "	7 00		
1—8x10 Bryant "	6 00		
1—Wall Accessory	4 00		
1—Electric Retouching Machine, good order	18 00		
1—15-in. Improved Eureka Bur- nisher	25 00		
1—10x12 Adaptable Washing Box	3 00		
1—15 in. Acme Burnisher, good as new	25 00		
1—11x14 Adaptable Washing Box	3 75		
1—14x17 Washing-Box	4 50		
2—5x8 Adt. Printing Frames, each	50		
1—Hetherington Daisy Fore- ground	4 00		

AMATEUR.

1—6½x8½ Ebonite Tray	45
1—5x7 Porcelain Tray	35
1—5x7 P. M. Tray	30
2—5x8 Japanned Trays, each . .	15
10—Junior Ruby Lamps, each, .	60
4—4x5 Feather-weight Holders, each	60
1—4½x5½ Negative Box	35
1—Walmsley Reversible Finder . .	2 50
1—Card-size Burnisher	3 00
Lot 5x8 Glass Trays, each . . .	25

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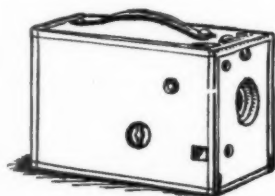
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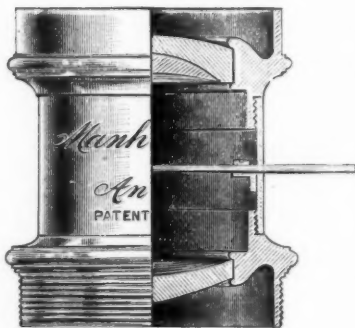
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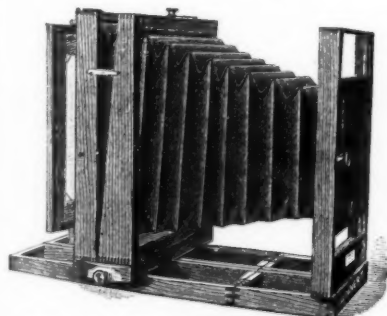
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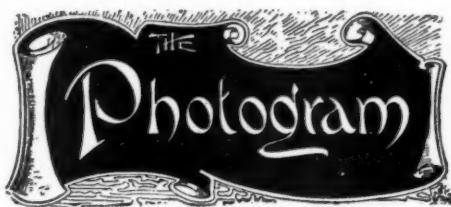
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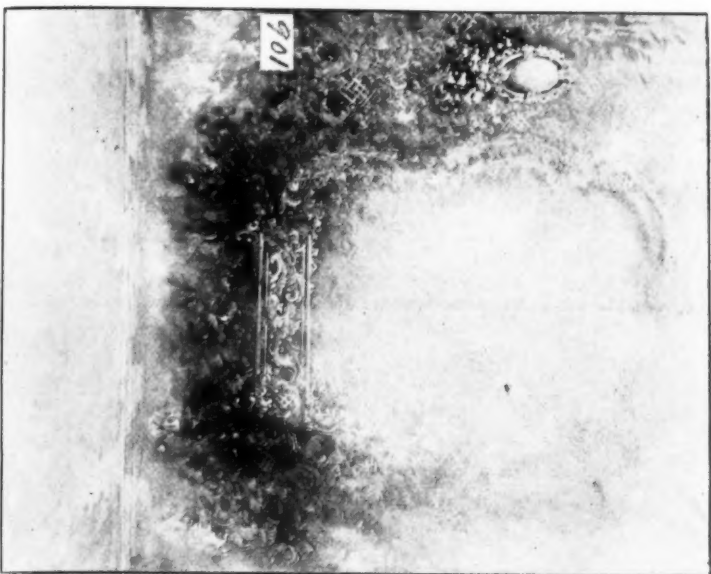
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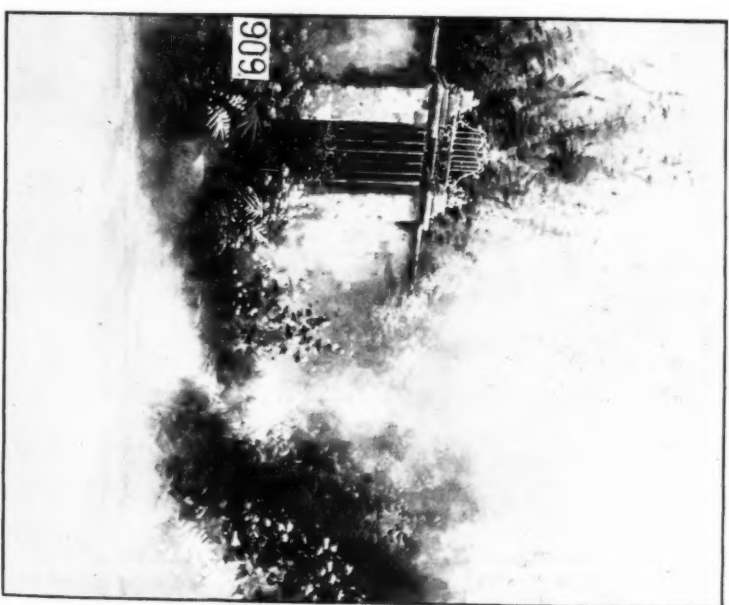
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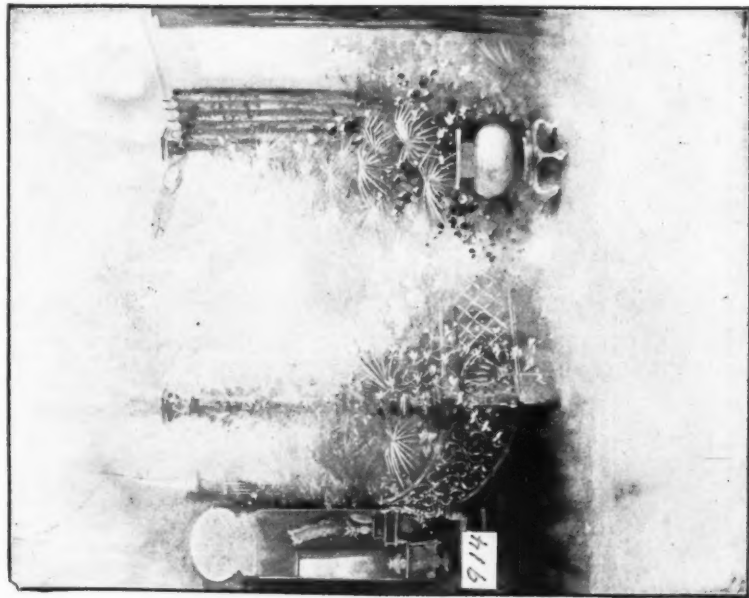
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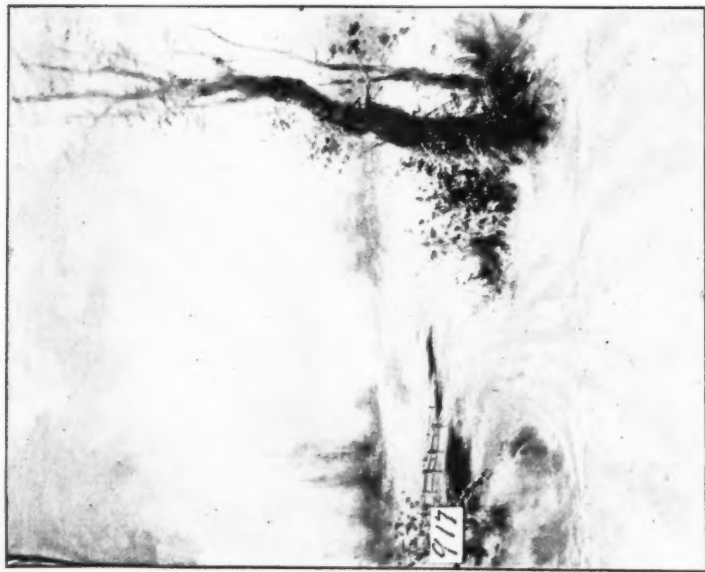
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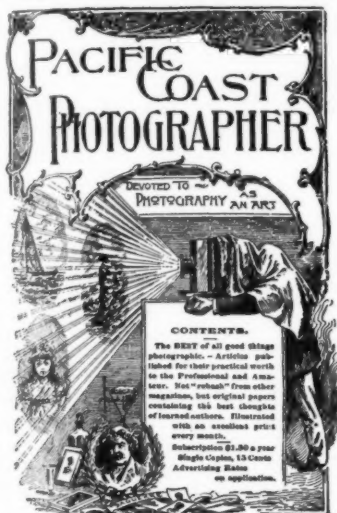
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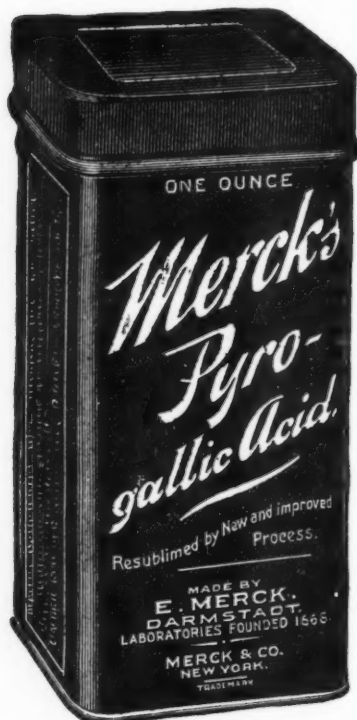
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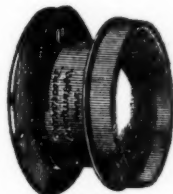
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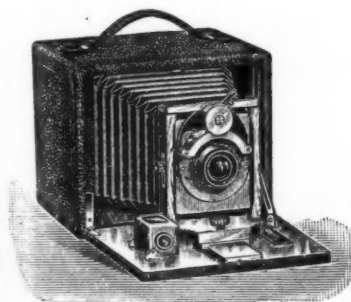
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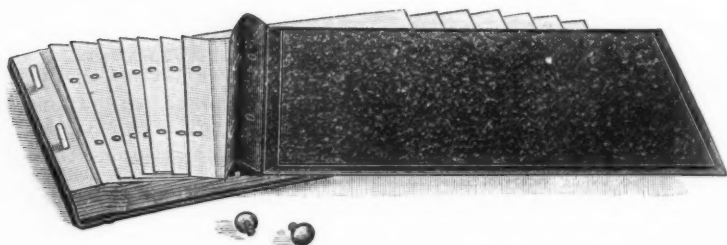
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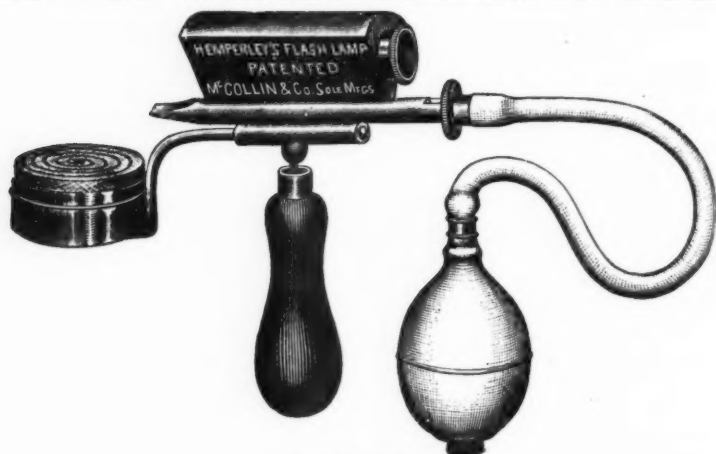
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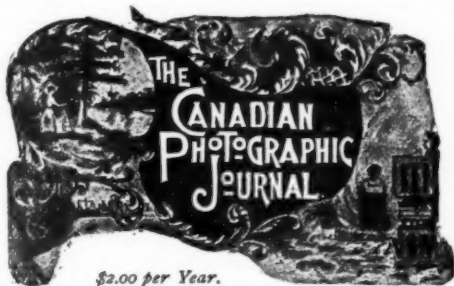
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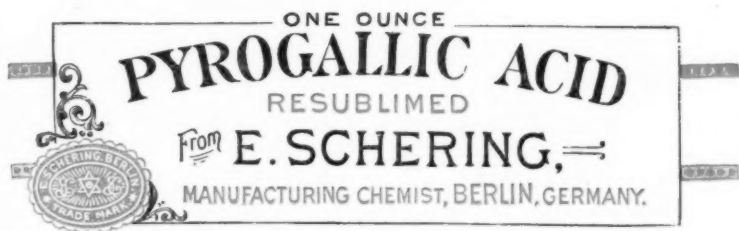
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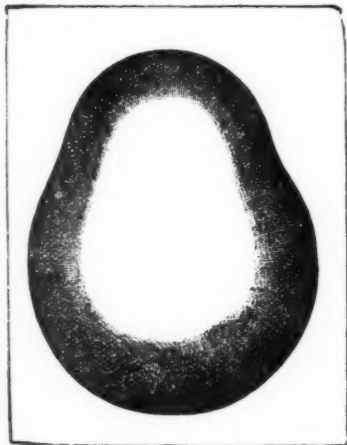
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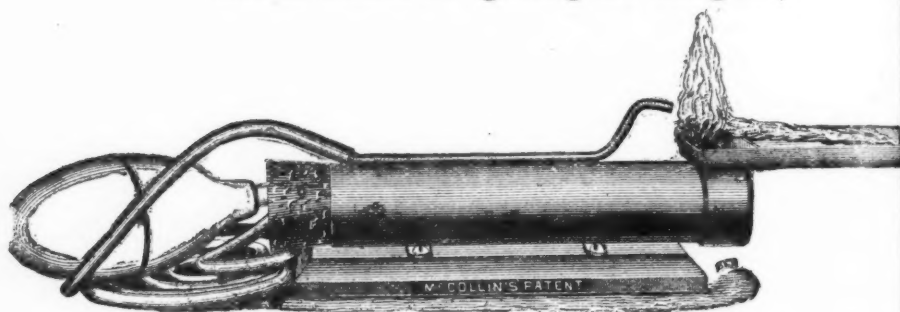
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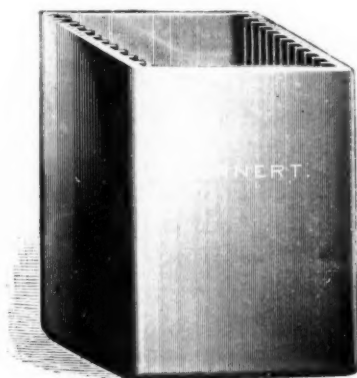
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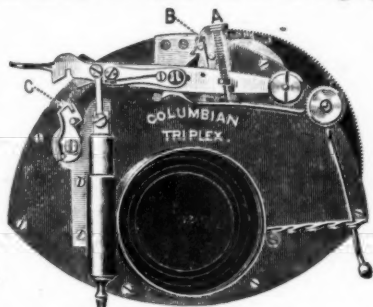
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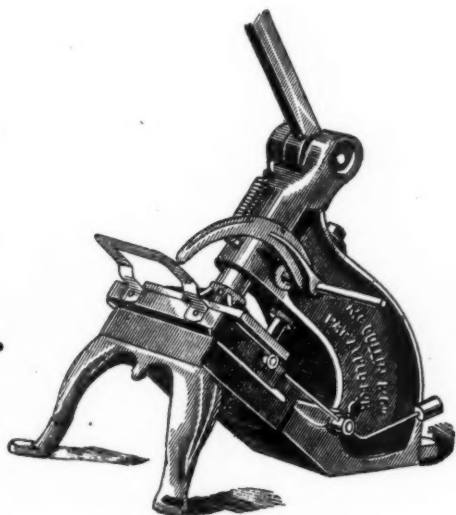
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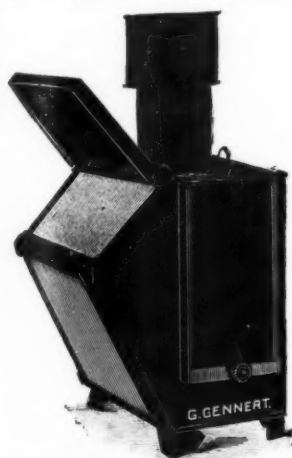
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